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International Banking and Transmission of the 1931 Financial Crisis

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Abstract

In May-July 1931, a series of financial panics shook central Europe before spreading to the rest of the world. This paper explores the role of cross-border banking linkages in propagating the central European crisis to Britain and the United States. Using archival bank-level data, I document US and British banks' exposure to central European frozen credits in 1931. Central European lending was mostly done by large and diversified commercial banks in the United States and by small and geographically specialized merchant banks/acceptance houses in Britain. Differences in the organization of international bank lending explain why the central European crisis disturbed few US banks but endangered many British financial institutions.

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In 1931, the world economy experienced one of its most severe financial crises ever. From May to July, a series of financial panics shook central Europe and brought down the currencies and banking systems of Austria, Hungary, and Germany. In order to thwart capital outflows, central European governments suspended foreign exchange payments; that action led to the freeze of all short-term credits granted by foreign creditors to customers in the region.¹ The second half of 1931 was then marked by global financial instability. Troubles in the European periphery soon spread to the centre of the international financial system. A speculative attack on the pound sterling pushed the United Kingdom off the gold standard in September, and the United States witnessed a severe banking panic that summer and autumn.

How did the 1931 financial crisis propagate internationally? While most authors agree that events in Germany and central Europe had international repercussions, the precise channels of propagation remain debated.² One hypothesis is that cross-border banking linkages facilitated transmission of the crisis.³ On this account, the crisis on the continent directly affected US and British banks' balance sheets because of their exposure to central European frozen credits. Several authors have also argued that the German crisis acted as a wake-up call inducing investors and depositors to reassess other countries' fundamentals and leading to contagion.⁴ Finally, scholars have noted that the fixed exchange rates gold standard system was a powerful channel of crisis transmission.⁵ Following the suspension of gold convertibility in central European countries, speculative pressure mounted on other gold standard currencies. Britain was first forced to devalue and a drain on US gold reserves in the autumn led the Federal Reserve to tighten monetary policy, therefore intensifying pressure on American banks.

¹ Harris, *Foreign indebtedness*; Ellis, *Exchange controls*; Ritschl, *Deutschlands Krise*.

² See Temin, 'Transmission', pp. 87-102; Richardson and Van Horn, 'In the eye'.

³ See Clarke, *Central Bank Cooperation*, p. 202; Friedman and Schwartz, *A monetary history*, p. 314; Temin, 'Transmission'; James, *End of Globalization*; idem, *Creation and destruction*; Richardson and Van Horn, 'Intensified regulatory scrutiny'; idem, 'In the eye'; Accominotti, 'London merchant banks', pp.1-43; Borio, James and Shin, 'International monetary and financial system'; Ritschl and Saferaz, 'Currency versus banking in the financial crisis of 1931'; Straumann, Kugler and Weber, 'How the German Crisis'.

⁴ See Friedman and Schwartz, *A monetary history*, p. 314; Temin, 'Transmission', p.93.

⁵ Friedman and Schwartz, *A monetary history*; Kindleberger, *World in depression*; Eichengreen, *Golden fetters*; Temin, 'Transmission'.

This paper explores the role of cross-border banking in propagating the central European crisis of 1931 and examines how the freeze of central European assets affected banks in Britain and the United States. Recent research has provided mixed results on this channel of transmission. On the one hand, although there was no run on British commercial banks in 1931,⁶ Accominotti shows that the central European crisis of May–July severely affected the London merchant banks’ balance sheets and that the Bank of England’s response contributed to the sterling crisis of September.⁷ On the other hand, although numerous banks failed in New York City in July–September 1931, Richardson and Van Horn demonstrate that these failures were not related to the German crisis and that the balance sheets of New York City banks with significant foreign exposure did not change dramatically following the events in central Europe.⁸

Accounts of the episode by contemporary observers corroborate these findings and reveal that British bankers were much more concerned than US bankers about the repercussions of the German crisis. For instance, in a letter addressed to the Bank of England Governor Montagu Norman, two leading City bankers noted that the German crisis had ‘threatened for the first and only time, except at the outbreak of War in 1914, to cause serious difficulties in the London Money Market.’⁹ Metz remarked that the German crisis could have triggered ‘chaos in the London discount market’¹⁰ and Truptil noted that it ‘increased considerably the risks of bank failures.’¹¹ Yet US bankers did not seem much alarmed by the German crisis. For example, Thomas Lamont of JP Morgan thought in 1931 that ‘short-term German credits [did] not constitute, in their volume, a danger to the American banking situation today.’¹²

Why did the central European crisis trigger more concerns in Britain than in the United States? I argue that the repercussions of the continental crisis on London arose from the specific market structure of the British international bank lending/trade finance industry. The largest

⁶ See Billings and Capie, ‘Financial crisis’; Turner, *Banking in crisis*.

⁷ Accominotti, ‘London merchant banks’.

⁸ Richardson and Van Horn, ‘Intensified regulatory scrutiny’; idem, ‘When the music stopped’; idem, ‘In the eye’.

⁹ Archives, Royal Bank of Scotland, WES 1174/185, 30 November 1931. The letter’s authors are the chairmen of the British Bankers Association (J. B. Beaumont Pease) and Accepting Houses Committee (W. H. N. Goschen).

¹⁰ Metz, ‘Standstill bills’, p.198.

¹¹ Truptil, *British banks*, p.290.

¹² United States Senate, *Hearings*, 18 December 1931, p. 33.

portion of central European credits granted by US and British banks consisted of short-term trade finance credits, especially bankers' acceptances granted to German banks and customers. In London, a strong distinction prevailed between banks that engaged in domestic lending and those that engaged in foreign trade finance/acceptance lending. Foreign lending was mainly the activity of small, specialized institutions—especially the London merchant banks and acceptance houses, which had historical links to specific borrowing countries. As a result, most of the central European credits and acceptances granted by British creditors in 1931 were held by small and poorly diversified banks, whose exposure to the region was high relative to their capital and total assets. While British commercial banks had little German exposure relative to their balance sheets, many acceptance houses/merchant banks were very heavily exposed and several of them were on the brink of failure in the summer of 1931. Since these institutions were also central to the London money market, the freeze of central European assets could potentially have threatened overall British banking stability and this situation contributed to weaken the pound sterling. Therefore, Britain's devaluation of September 1931 and subsequent macroeconomic path were partly determined by the microeconomic structure of the London financial system, which facilitated transmission of the crisis from central Europe.

In the United States, by contrast, foreign lending was mainly the activity of the largest commercial banks: the big national banks and trust companies of New York City and other central reserve cities. Most of the central European credits granted by US banking creditors were therefore held by the country's largest banks, whose exposure to the region remained low relative to their balance sheet. Because of their large size and higher diversification, these banks were better able to cushion a default from central European borrowers; hence the crisis on the continent did not directly threaten their liquidity or solvency.

Why was the industrial organization of international bank lending different in Britain and the United States? In order to explain this, I emphasise the role of informational advantages and regulation in bank lending. The London merchant banks' long history of lending to foreign customers and strong historical links to Germany and central Europe gave them a comparative

informational advantage over their main competitors - the large British commercial banks - in these countries. In addition, the Bank of England attempted to discourage commercial banks - through moral suasion - from expanding their continental activities. These forces allowed the merchant banks to maintain their market shares in the region. By contrast, New York had only recently emerged as an international financial centre in the interwar period and few US banks already had a history of lending to foreign customers. Therefore, when the large American commercial banks started engaging in international trade finance in the 1920s, they faced little competition from other US financial institutions in foreign countries. Regulatory provisions of the Federal Reserve Act of 1913 also advantaged the largest commercial banks over smaller ones in international trade finance; thus, the former captured the largest market shares in central European lending.

My argument is supported by new data and empirical results. I rely on archival and published sources documenting balance sheets, exposure to central European credits, and foreign correspondents for a large sample of British and US banks in 1931. I report evidence that the central European financial crisis of 1931 endangered a large number of specialized British acceptance houses but only disturbed a handful of US financial institutions. I also show that the distribution of central European frozen credits across banks was markedly different in Britain and the United States. Finally, an analysis of the geographical distribution of London and New York banks' foreign correspondents reveals that creditor banks specialized in foreign markets where they had a historical informational advantage, consistent with the theory of informational capital in bank lending.

The paper first presents a brief narrative of the central European financial crisis of 1931 (section I) before describing the sources and data (section II). I next document US and British banks' central European exposure and relate their exposure to changes in their balance sheets during the crisis (section III). Finally, I describe and analyse differences—between Britain and the United States—in the market structure of the international bank lending industry (section IV) and present conclusions (section V).

I

During the second half of the 1920s, Germany, Austria, and Hungary imported large amounts of capital from abroad.¹³ Foreign borrowing consisted mostly of long-term bonds—floated by governments, municipalities, and corporations in the main international financial centres—and short-term commercial debts, especially bankers' acceptances granted by leading financial houses in the same centres. Net private capital inflows to Austria, Germany, and Hungary increased dramatically following the stabilization of their respective currencies during 1923–24.¹⁴ Starting in 1929, however, the influx of foreign capital to central Europe slowed down significantly before actually reversing in 1931. In that year, central European countries experienced a wave of banking and currency crises.¹⁵

In an attempt to prevent capital outflows, central European governments introduced capital controls that aimed to suspend foreign exchange payments.¹⁶ These exchange controls prevented currency depreciation and halted deposit withdrawals from banks—but only by passing the buck to foreign creditors. Central European debtors needed foreign exchange to service their short-term foreign currency debts. Since purchases of foreign currencies were now severely restricted, they were forced either to default on their external debts or to make some arrangement with their creditors for settlement.

To prevent an outright default, foreign creditors agreed—at the London Conference of 20–23 July 1931—to reschedule all short-term credits to German customers and to maintain existing credit lines. That decision resulted in the freeze of creditors' short-term assets for an indefinite period. The rescheduling of German debts was then formalized through a series of so-called standstill agreements initiated in September 1931. Existing credits were prolonged for a

¹³ Ritschl, *Deutschlands Krise*; idem, 'German transfer problem'; Accominotti and Eichengreen, 'Sudden stops'.

¹⁴ Feinstein and Watson, 'International capital flows'; Feinstein, Temin and Toniolo, *The world economy*, chapter 5; Accominotti and Eichengreen, 'Sudden stops'.

¹⁵ James, *German slump*; idem, *End of Globalization*, Schubert, *Credit-Anstalt*; Ferguson and Temin, 'Made in Germany'; Schnabel, 'German Twin Crisis'; idem, 'The role of liquidity'; James, *Creation and destruction*.

¹⁶ Ellis, *Exchange control*.

six-month period while interest continued to be paid. Similar agreements were then reached with Austrian and Hungarian debtors in the following months.

The issue of Germany's frozen external debts persisted throughout the interwar, war and post-war years and was not fully resolved until 1953. The Standstill agreements were renewed repeatedly until the outbreak of the Second World War (WW2) and those renewals had the effect of transforming all short-term central European credits into long-term ones. Yet from 1931 until the start of WW2, substantial uncertainty persisted over periodic renewal of these agreements and substantial doubts remained about whether the 'frozen credits' would ever be repaid. The agreements were suspended during WW2, and a comprehensive settlement of the remaining German private external debt was eventually reached at the London Debt Conference of 1953.¹⁷ On 22 June 1961, the *New York Times* finally noted that 'the last capital repayments were made to American, British and Swiss creditor banks', in effect terminating the German standstill agreement.¹⁸ Thus three decades passed before foreign creditors could eventually obtain full reimbursement of their German 'short-term' credits outstanding in the summer of 1931.

British and US banks were among those providing the most foreign capital to central Europe in the second half of the 1920s. In particular, they had extended large amounts of trade finance credits to their central European customers. These credits took the form of direct short-term loans or, more commonly, bankers' acceptances granted to banks and firms in the region.¹⁹ A *bankers' acceptance* is a trade finance instrument through which a financial institution in the United States (respectively, Britain) guaranteed, in exchange for a fee, a foreign firm's short-term debt so that the latter could borrow in dollars (respectively, sterling) on the New York (respectively, London) money market. By 'accepting' a bill of exchange/acceptance, the American or British bank committed to repay its holder at maturity in the expectation that it would receive payment from the borrower before the payment came due.²⁰ Bankers' acceptances

¹⁷ Diaper, 'Merchant banking', pp. 71-72; Guinnane, 'Financial Vergangenheitsbewältigung', p. 15.

¹⁸ *New York Times*, "Old German Debt Paid in Full. US Creditors Close Books on '31 Standstill Accord", 22 June 1961, p. 39.

¹⁹ See Harris, *Germany's foreign indebtedness*, p.19; Accominotti, 'London merchant banks'.

²⁰ Accominotti, 'London merchant banks', pp. 6-8 describes the working of bankers' acceptances.

were therefore credit guarantees granted by the banks. When foreign exchange restrictions were introduced in the summer of 1931, central European debtors could no longer repay the dollar and sterling bills they had drawn on US and British banks. In order to honour their guarantees toward the bills' holders, it was necessary for the accepting banks either to draw on their own cash resources or to renew, systematically, the central European bills as they matured.²¹ However, bills so renewed ('standstill bills') were backed by debts of extremely dubious quality and so held little interest for investors. Therefore, the liquidity of these bills depended crucially on whether monetary authorities would rediscount them.²²

In addition to trade finance credits, US and British banks had also granted short-term loans to central European public authorities. During 1924–1931, German public authorities and corporations also issued large amounts of long-term bonds in New York and London that were underwritten by the main British and American banks. Interest service on these bonds was not suspended until July 1933, but their price collapsed on the secondary market following the German crisis. However, most of the long-term German bonds floated in New York and London had been sold to the public and so were held by individuals, not banks.²³

How high was the overall exposure of US and British banks to central Europe? Although there are no estimates of the total Austrian and Hungarian credits held by foreign banking creditors, contemporary sources indicate that American and British banks held (respectively) \$654 million and \$316 million (£65 million) of German short-term credits in 1931 (see appendix S1). At the aggregate level, German credits represented 21.32 per cent and 33.21 per cent of the

²¹ Under the standstill agreements, accepting banks had the option of either transforming their acceptance claims on German debtors into 'frozen' cash advances carried on the asset side of their balance sheet or of renewing their guarantee at maturity. In the latter case, 'as each old bill reach[ed] maturity, a new bill [was] drawn against the same credit and discounted again ... In many cases, the funds rendered available by the discount of the new bill [were] then applied to the payment of the old bill' (*The Economist*, 'The New German Standstill', 23 February 1935, p. 424).

²² See Sayers, *Bank of England*, p. 509; Truhtil, *British banks*, p. 314; Accominotti 'London merchant banks'; Allen and Moessner 'International propagation', p. 137, on how the Bank of England safeguarded the marketability of standstill bills.

²³ See Schuker, *American reparations*, p. 81; Guinnane, 'Financial Vergangenheitsbewältigung', p. 19. US and British banks held (respectively) only 6.2 and 5.7 per cent of the total German long-term debt owed to US and British creditors in September 1932, and long-term credits accounted for (respectively) only 12.1 and 6.1 per cent of the American and British banks' total exposure to Germany (Note found in Bundesarchiv, Koblenz, record N1138/27). In this note, long-term debt is defined as debt with a maturity longer than one year. See also the figures for November 1931 included in a note kept in the archives of the Federal Reserve Bank of New York (261.12, 5 April 1932).

New York and London banks' 1930 capital and reserves, and they amounted to 3.41 per cent and 2.67 per cent of their respective 1930 total assets.²⁴ Although not negligible, aggregate exposure was therefore relatively small compared to the size of both banking systems.

However, accurately assessing the impact of the central European shock on overall financial stability in the creditor countries requires more than estimates of the US and British banking systems' total exposure to the region; in particular, it requires understanding how exposure was distributed across banks. Billings and Capie and Accominotti examine how the central European crisis of 1931 affected the British banking system using data on individual banks' exposure to Germany, Austria, and Hungary.²⁵ Richardson and Van Horn study how transatlantic contagion affected New York City banks in 1931 using a bank-level index of foreign exposure combining information on their foreign bonds, deposits abroad and foreign liabilities.²⁶ Yet US banks' central European exposure – especially through acceptances- has never been documented systematically at the bank level. A key contribution of the present paper is providing new data on US banks' exposure to central European credits in 1931.

II

I rely on archival and published sources providing information on British and US banks' holdings of central European frozen credits and foreign correspondents.

Data on individual British banks' central European exposure are from previous work by Billings and Capie and Accominotti as well as additional archival sources.²⁷ Thus we know the amount of German and central European frozen credits and acceptances held by 26 British financial houses; these include the five biggest British commercial banks (known as the 'Big Five'), another clearing bank, and 20 London merchant banks or acceptance houses. Data on

²⁴ Total assets, aggregate capital, and reserves of New York central reserve member banks in December 1930 are from Board of Governors, *Banking and Monetary Statistics*, sec. 2, pp. 80–81: 'Total Assets' and 'Capital Account, Total'. The corresponding values for London banks are constructed as the sum of the total assets, capital, and reserves of the ten London clearing banks (as reported in *The Economist*, 'Monthly Statement of London Clearing Banks', 1930-1931) and of the London merchant banks (as estimated by Truption, *British banks*, p. 162).

²⁵ Billings and Capie, 'Financial crisis'; Accominotti, 'London merchant banks'.

²⁶ Richardson and Van Horn, 'Intensified regulatory scrutiny'; idem, 'In the eye'.

²⁷ Billings and Capie, 'Financial crisis'; Accominotti, 'London merchant banks'.

individual US banks' exposure to Germany, Austria, and Hungary in 1931 were collected from various archival and published sources (see appendix S2). Combining these sources enabled me to reconstruct the amount of central European frozen credits of 19 US financial institutions as of 1931. The sample includes ten New York City national banks or trust companies, six national banks of other central reserve cities, two acceptance corporations that specialized in trade finance and one private bank. These data cover all types of short-term credits that were frozen in 1931 when central European governments introduced foreign exchange restrictions.

The two samples of banks on which this part of the analysis is based reflect the availability of data and are not representative of each creditor country's banking system; however, they do cover the bulk of the central European credits held by British and American financial institutions. The 26 British banks for which central European exposure is known account for 90 per cent of the banking system's total assets in 1930 and for 89 per cent of the aggregate amount of German short-term debts owed to all British financial institutions. The sample of 19 US banks for which relevant data are available accounts for only 21 per cent of the US banking system's total assets in 1930 but includes the country's largest banks, which (as argued here) were responsible for most of the US short-term foreign lending. As a result, these 19 institutions account for 73 per cent of the aggregate German short-term credits held by all US banking creditors in 1931.²⁸

In order to confirm my results, I also complement this direct information with a new dataset of London and New York City banks' foreign correspondents. When lending to foreign customers, British and US banks usually relied on banking correspondents in the debtors' countries.²⁹ Correspondents were financial institutions that acted as agents of the creditor banks, were in direct contact with the ultimate borrowers and also guaranteed their debts. For example, a German merchant willing to borrow on the London or New York discount market usually first

²⁸ The figure for total assets of all US banks in 1930 is from Carter et al., *Historical statistics*, series Cj252.

²⁹ The practice of intermediating foreign acceptance credits through banking correspondents has been described by contemporaries such as Phelbs, *Foreign expansion*, pp. 21-24; Hawtrey, *Currency*, p. 125; Truutil, *British banks*, p. 136 and more recently by Michie 'City of London', pp. 27-28; Suzuki 'Oriental Bank Corporation', p. 92; and Eichengreen and Flandreau 'Rise of the Dollar', p. 60.

went to her local bank and asked for a credit. After assessing her creditworthiness, the local bank instructed the merchant to draw a bill on a London or New York accepting bank with which it had a correspondent agreement. Correspondent agreements between a London or New York bank and a foreign bank typically involved a credit line on which the foreign bank's customers could draw.³⁰ For example, *The Economist* noted that 'acceptance houses place[d] acceptance lines at the disposal of German banks' and that 'the German banks pass[ed] these lines on to their customers, who dr[e]w on the acceptance houses.'³¹ The number of a bank's correspondents in a given country therefore provides an indication of the volume of its lending activities in that country.

I reconstructed the set of all important London and New York banks' foreign correspondents (from here on referred to as 'portfolio of correspondents') using the *Bankers' Almanac and Year Book*, a British directory providing practical information about foreign financial institutions. The 1930/31 issue of the *Almanac* lists 3,352 foreign banks located in 86 countries and gives the list of each bank's correspondents in New York and London, which I used to infer each creditor bank's portfolio of foreign correspondents.³² There are, of course, some limitations to these data on foreign correspondents. In particular, US and British banks did not use correspondents solely for their cross-border lending activities but also for international payments. Contemporaries appear to have considered the *Bankers' Almanac* as the most comprehensive source on foreign banks; yet, its listings may reflect selection biases. That being said, the cross-sectional correlation between the amount of central European credits held in 1931 and the number of central European correspondents is (respectively) 0.86 and 0.73 for the 13 New York banks and 26 London banks on which information is available. This indicates that the number of a bank's correspondents in central Europe is a reasonable proxy for its exposure to the region.

³⁰ See Michie, 'City of London', p. 27 and Truptil, *British banks*, p. 136.

³¹ *The Economist*, "German Banking During the Past Year", 11 May 1929, pp. 7-9.

³² *Bankers Almanac*.

Correspondent data allow me to present regression results obtained on a larger and more representative sample of financial institutions including most London and New York City banks operating at the time (28 London and 52 New York City banks). These data also provide useful insights into the other foreign markets where these banks operated and allow me to explore patterns of geographical specialization in their international activities.

III

I first document the direct exposure of individual creditor banks to German and central European credits and acceptances in 1931. For each bank in the sample, figure 1 reports the amount of its 1931 central European frozen credits outstanding to its end-1930 paid-up capital and reserves (panel A), and end-1930 total assets (panel B).

[[INSERT Figure 1 about Here]]

I distinguish between financial institutions whose primary activity was trade finance or acceptance lending ('acceptance houses', dark-grey bars) and banks, which engaged in a wider range of activities that included lending to the domestic industry, mortgage lending, and foreign banking ('commercial banks', light-grey bars).³³ Whereas commercial banks dominate the US sample, they are but a minority of the British sample. These different sample compositions arise primarily from differences between the two creditor countries' banking structures and from the relatively fewer US than British financial institutions that specialized in trade finance.

The figure indicates that British and American commercial banks' exposure to central Europe was limited relative to their capital and total assets. However, many financial institutions specializing in international trade finance (acceptance houses) were severely hit. Of the 20

³³ The former category includes 20 merchant banks or Anglo-foreign banks in the case of Britain and, in the United States, two acceptance corporations (International Acceptance Bank, Inc., and J. Henry Schroder Banking Corporation or Schrobanco) and one private bank (Brown Brothers Harriman & Co.). The latter category encompasses the largest British and American commercial banks, which include the Big Five London clearing banks as well as the large US national banks and trust companies of New York City and other central reserve cities. The balance sheets of seven British acceptance houses (banks A-G) were communicated by the archivists on the condition that their anonymity be preserved. The distinction between acceptance houses and commercial banks need not reflect differences in the banks' ownership structure or charter; it is based solely on the nature of these banks' activities.

London acceptance houses in the sample, 12 had frozen credits on their books that exceeded the 1930 value of their capital and reserves when the central European crisis broke out (figure 1, panel A). Especially exposed were the institutions of German origins, such as Japhets, Schröders, Kleinworts, or London Merchant Bank. Two American acceptance corporations in the sample – whose activities were similar to those of the specialized British acceptance houses- also exhibited high exposure to central European credits in relation to their capital: the International Acceptance Bank (IAB) and J. Henry Schroder Banking Corporation (Schrobanco). IAB had been formed in 1921 by the German-born banker Paul Warburg who used his connections on the continent in order to extend acceptance credits to European customers.³⁴ Schrobanco had been created in 1923 when the London acceptance house of German origin Schröders established a partner entity in the United States in order to grant loans to its European clients through the New York acceptance market.³⁵

These banks were potentially insolvent in the summer of 1931 as the value of their central European frozen assets exceeded their paid-up capital and reserves. Before WW1, most London acceptance houses were organized as partnerships and owners were personally liable for all of their bank's debts. However, the majority of these institutions had changed their legal form in the 1920s to become private (or sometimes, public) limited liability companies.³⁶ While four of the most exposed houses (Bank A, Kleinworts, Schröders, and Guinness Mahon) were still unlimited liability companies, the large deposit losses and balance sheet contraction these banks all experienced in 1931 indicates that there were also serious fears about their solvency. In addition, the debt rescheduling agreed upon at the London Conference had the effect of converting all short-term central European credits into long-term ones; of course, that conversion seriously endangered the liquidity of acceptance houses. For 10 of the 20 British acceptance houses in the sample, frozen credits exceeded their 1930 cash resources.

³⁴ *New York Times*, 'Acceptance Bank Will Open Today', 18 April 1921, p. 25.

³⁵ See *New York Times*, 'Banking House Organized', 26 October 1923, p. 25. See Roberts, *Schröders*, pp. 280–312 on the activities of J. Henry Schroder Corporation during the interwar period.

³⁶ Truptil. *British banks*, p. 135.

The difficulties encountered by acceptance houses were due less to their low level of capitalization than to their high degree of specialization. In fact, London merchant banks had, on average, higher capital ratios than the British commercial banks, and the three US acceptance houses in figure 1 also had a level of capitalization similar to the other American commercial banks in the sample. What matters however is that frozen credits represented a much higher share of the acceptance houses' total assets (figure 1, panel B). In short, the central European crisis mainly affected small financial institutions that specialized in lending to this region.

In order to explore the incidence of the central European freeze of assets on British and US banks' balance sheets, I run a set of regressions relating each bank's percentage change in total assets, deposits and liquid assets (including cash and all negotiable securities) between December 1930 and December 1931 to its central European exposure (tables 1 and 2).³⁷ The regressions control for bank size (log of total assets), capital ratio (ratio of capital and reserves to total assets), liquidity ratio (ratio of cash resources to deposits), for whether the bank was an acceptance house and, in the case of the United States, for whether it was nationally chartered.³⁸ Asset-side exposure to central Europe is measured either through the banks' ratio of central European frozen credits to capital and reserves (columns I to III) or their number of correspondents in central Europe (columns IV to VI).³⁹ While the former measure is more precise, it is only available for a limited (and not randomly selected) sample of British and US financial institutions. By contrast, the number of a bank's correspondents constitutes an imperfect proxy only for its exposure to central European credits but this indicator is available for all London and New York City banks.

[[INSERT Table 1 about Here]]

The regression results indicate that British banks highly exposed to central European frozen credits experienced greater balance sheet contraction, more deposit losses and a larger

³⁷ Richardson and Van Horn, 'In the eye', present similar regressions relating Manhattan banks' balance sheet changes to their *overall* foreign exposure in 1931.

³⁸ These control variables are measured as of December 1930.

³⁹ For robustness, I also ran regressions using the ratio of central European credits to total assets (rather than capital) as a measure of exposure. The results were qualitatively unchanged.

reduction in their liquid assets than other institutions in 1931 (table 1). The relationship between banks' balance sheet changes and central European exposure is statistically significant at the 1 per cent level when exposure is measured through the ratio of frozen credits to capital (columns I-III) and at the 10 per cent level when it is proxied by the number of central European correspondents (columns IV-VI). British financial institutions with frozen credits in excess of their capital resources endured an average 67 per cent decline in deposits between December 1930 and December 1931 as the crisis raised serious depositor fears about their solvency and liquidity, and their total assets declined by 39 per cent on average.

[[INSERT Table 2 about Here]]

By contrast, I find no statistically significant association between US banks' central European exposure and changes in their balance sheets in 1931 (table 2). This holds when considering the small sample of 18 American banks for which holdings of central European credits are known (columns I-III) as well as the sample of 52 New York City banks on which balance sheet and correspondents data are available (columns IV-VI). This result is consistent with Richardson and Van Horn's finding that the balance sheets of New York City commercial banks with comparatively higher foreign exposure did not change more than those of other banks in the summer of 1931.⁴⁰ The absence of a relationship here also arises from the fact that there were very few financial institutions in the United States that exhibited significant central European exposure relative to their balance sheets as well as little variation in exposure across the US acceptance houses in the sample. Balance sheet data suggest that, for American commercial banks, exposure to central Europe was not the main cause of troubles in 1931. While the acceptance corporations IAB and Schrobanco - both heavily involved in central Europe - lost more than 50 per cent of their deposits in 1931, other much less exposed US commercial banks also experienced significant deposit withdrawals, for reasons apparently unrelated to the German crisis.

⁴⁰ Richardson and Van Horn, 'In the eye'.

The different effect of the central European crisis on the British versus US banking system was related to the important differences that existed in the organization of central European lending between the two creditor countries. In Britain, frozen central European credits were predominantly held by small, specialized financial institutions, which were particularly vulnerable to a central European default. In the United States, frozen credits were mostly held by large, diversified commercial banks with lower exposure proportionately to their balance sheets.

Figure 2 shows the distribution of US and British banks' German short-term credits by bank size as proxied by their capital and reserves in panel A and by their total assets in panel B.⁴¹ For each creditor country, the graph reports the share of the total German short-term debt owed to banks with different levels of equity and total assets. The share of German debt owed to banks that are not in the sample is reported in the 'Not in Sample' category.

[[INSERT Figure 2 about Here]]

The share of small banks in German lending was much higher in Britain than in the United States. British financial institutions in the sample with less than £5 million of capital and reserves accounted for 50 per cent of the British banking system's overall exposure to Germany. In contrast, commercial banks whose capital and reserves amounted to more than £20 million held only 17 per cent of the British banking system's aggregate German frozen credits. This finding reflects the distinctive structure of the British banking system and also the still preponderant role played—in foreign lending and trade finance during the interwar period—by small and highly specialized London acceptance houses.

In the United States however, the largest banks accounted for the lion's share of short-term lending to Germany. More than half of the US banks' aggregate German short-term credits were held by just seven institutions, each with more than £20 million in capital. At the same time, the smaller financial institutions in the sample (with less than £5 million in capital) held only 11 per cent of the total German credits owed to US banks in 1931.

⁴¹ In this figure 2, the focus is on German credits because there is no available information on the aggregate amounts of Austrian and Hungarian debts owed to the US and British banking creditors. However, Austrian and Hungarian credits constituted only a very small share of the US and British banks' overall central European credits.

The US sample accounts for ‘only’ 73 per cent of the total German exposure of American banks. However, it is unlikely that much of the remaining 27 per cent were held either by small private banks and acceptance corporations or by small commercial banks spread across the country. First, although the sample excludes several private banks (e.g., Lee Higginson & Co., Ladenburg Thalmann & Co., Hallgarten & Co.) with connections to Germany, it also omits large commercial banks (e.g., New York Trust, Central Hanover Bank and Trust) that certainly carried substantial amounts of German short-term credits on their balance sheets. Second, qualitative evidence from the Hearings of the United States Senate’s Committee on Finance suggests that most German short-term credits were held by about 100 US financial institutions.⁴² Thus hardly any of the innumerable ‘unit banks’ spread across the United States were at all engaged in German lending. Finally, the subsequent analysis of data on foreign correspondents confirms that (a) the largest American commercial banks were also the market leaders in central European lending and (b) few acceptance houses and private banks, other than the three listed in figure 1, had substantial market shares in the region.

The concentration of German frozen credits among small and poorly diversified banks in Britain had important implications for the transmission of the central European crisis to the London money market. Even as the suspension of foreign exchange payments in central European countries left the large British commercial banks’ balance sheets practically unaffected, it raised doubts about the solvency and liquidity of London’s acceptance houses and many of these institutions were on the brink of failure. Although the acceptance houses’ role in financing the British economy remained marginal, these institutions were highly connected with the rest of the British banking system and played a key role in the London discount market. At the end of 1930, bills of exchange drawn on acceptance houses (merchant banks and Anglo-foreign banks combined) represented 65 per cent of all sterling acceptances in circulation.⁴³ Many other banks had invested in these bills. The discount houses, in particular, specialized in buying short-term bills and were therefore highly vulnerable to failures among the acceptance houses. Likewise, the

⁴² United States Senate, *Hearings*, 4 January 1932, p. 410.

⁴³ Truptil, *British banks*, p. 261.

large British commercial banks directly invested in acceptances and were also indirectly exposed to the merchant banks through the large sums of short-term (call) money they had lent to discount houses.⁴⁴ Failures among the acceptance houses would have severely affected the discount houses and there was a potential risk of a chain reaction, which might have spilled over to the clearing banks. According to Metz, ‘what the reaction of the banking system would have been at that time had any of these [acceptance] Houses been forced to the wall (...) can only be surmised. (...) Any serious hitch, therefore, in the functioning of the discount market, might conceivably have unleashed a run on the banks that would have undermined for many a year to come, the confidence traditionally placed in the London market.’⁴⁵

In the end, acceptance houses avoided failures thanks to the Bank of England’s accommodating attitude. The Bank sponsored the standstill agreements concluded between banking creditors and their German debtors, and following those agreements it declared standstill bills (which were, in effect, constantly renewed bills) to be eligible for rediscount at the Bank.⁴⁶ This policy safeguarded the marketability of these bills despite their being backed by doubtful and frozen assets, ensuring that the most exposed acceptance houses would remain liquid and thereby avoiding their failure. Nonetheless, Accominotti argues that uncertainty regarding the situation of merchant banks and the Bank of England’s relaxed standards did contribute to the sterling crisis and devaluation of September 1931.⁴⁷

In the United States, however, frozen credits were concentrated among big and diversified banks with lower exposure relative to their balance sheets. Hence the freezing of their central European assets did not directly threaten the solvency or liquidity of American commercial banks. Whereas the German crisis had imperilled a whole segment of the London money market, only a handful of US financial institutions were heavily exposed in the summer of 1931 and most of them managed to weather the storm. For example, IAB was backed by its large holding

⁴⁴ Accominotti, ‘London merchant banks’, pp. 25-26.

⁴⁵ Metz, ‘Standstill bills’, p. 199.

⁴⁶ Truptil, *British banks*, p. 309; Sayers, *Bank of England*, p. 509.

⁴⁷ Accominotti, ‘London merchant banks’. The Bank of England evidently rediscounted many German standstill bills in the early 1930s even though these bills represented frozen assets and carried the signature of potentially insolvent institutions. According to Sayers, *Bank of England*, p. 509, almost half of the bills rediscounted by the Bank in 1932 were German standstill bills.

company (the Manhattan Company, which also held the large Bank of Manhattan Trust) and received immediate support from a group of five large commercial banks.⁴⁸ Likewise, Schrobanco borrowed from Chase National Bank and National City Bank, which agreed to repurchase its acceptances in the summer of 1931 so that the firm could obtain enough cash to meet its deposit withdrawals.⁴⁹ The only US financial institution whose failure appears to have been directly related to the German crisis was the private bank Lee Higginson & Co. This small house held \$7 million of German short-term trade credits in 1931, as well as a \$150,000 loan to the City of Hamburg and a \$12.25 million participation in a syndicate loan to the German government arranged under its auspices in October 1930.⁵⁰ Finally, Lee Higginson was indirectly exposed to German debts through its participation in the conglomerate of Swedish financier Ivar Kreuger, whose crash precipitated its failure in 1932.⁵¹ The bank was not bailed out. However, in contrast to the London acceptance houses, the few US financial institutions, which were heavily exposed to Germany, remained marginal players in the New York money market. Troubles could be contained, for the most part, which explains the belief of JP Morgan's Thomas Lamont that 'short-term German credits [did] not constitute [...] a danger to the American banking situation.'

In addition to their central European commitments, US commercial banks had also granted credits to Latin American customers and governments and a portion of those loans were in default in 1931 due to the economic depression and foreign exchange restrictions in the region. Overall however, US banks' exposure to Latin America appears to have been limited in comparison to their German exposure.⁵² One exception was the National City Bank of New York, which held more Latin American than central European assets in 1931-1932. However, this institution was one of the three largest New York banks of the time and, although not

⁴⁸ A few years later, IAB was absorbed by the Bank of Manhattan Trust.

⁴⁹ Roberts, *Schröders*, p. 241.

⁵⁰ See United States Senate, *Hearings*, 8 January 1932, pp. 1558–59. See also Bennett, *Germany*. Lee Higginson & Co. is not included in the sample of US banks of figure 1 and table 2 because I was unable to find information on its capital, total assets and liquid assets.

⁵¹ Partnoy, *The match king*; Straumann, Kugler and Weber, 'How the German crisis'.

⁵² According to the figures published by Board of Governors, *Banking and Monetary Statistics*, p. 585, the amount of German short-term assets held by New York City banks at the end of July 1931 was approximately three times larger than the amount of their Latin American assets.

negligible, its combined central European and Latin American exposure remained relatively modest in proportion to its balance sheet.⁵³

IV

I next propose to explain why small, specialized banks maintained large market shares in central European lending in Britain yet remained marginal players in the United States. I argue that a bank's size, its information about borrowers, and the regulatory environment in which it operated, were critical variables accounting for the extent of its involvement in foreign markets, including central Europe.

Most of the British and American banks' central European exposure in 1931 arose from the financing of international trade. That exposure consisted of direct credits and/or credit guarantees granted via bankers' acceptances. Granting such credits to foreign borrowers first required that creditor banks have enough capital to cushion potential defaults. Foreign lending was risky because creditors had few legal means of recovering claims from borrowers abroad that defaulted. Although granting credit guarantees did not technically require banks to immobilize resources, financial institutions with little capital were in no position to absorb any losses arising from individual debtors' defaults; such banks were therefore not regarded as credible acceptors (guarantors), so a bill carrying one's signature would not have circulated easily on the discount market. *Ceteris paribus*, large banks enjoyed an advantage over small banks in granting and guaranteeing credits to foreign customers.

However, a bank's ability to engage in foreign lending also depended on the information it held on markets abroad. A well-informed bank could select 'better' borrowers, thus minimizing its losses. The information required to assess a foreign borrowing firm's quality was not easily transferable across creditors and could only be acquired through time and repeated transactions.

⁵³ See US National Archives (College Park, Maryland), Records of the Office of the Comptroller of the Currency, *Examiner's Report* (National City Bank of New York), 30 September 1932. The bank's combined exposure to Latin America and central Europe represented approximately 70 per cent of its capital and reserves and 10 per cent of its total assets in April 1932. Other New York City national banks on which examiners' reports are available exhibited much less Latin American than central European exposure.

Therefore, creditor banks that had been present in foreign markets for a long time had an obvious advantage there as credit intermediaries. It was costly for a bank to move into a new market, since doing so required that the bank acquire new knowledge and expertise while establishing new correspondent relationships. These fixed costs of entry into foreign markets gave lenders an incentive to specialize in countries where they had an initial comparative advantage.⁵⁴ Given the informational asymmetries among creditor banks, institutions entering a new foreign market—in which several banks were already established—faced adverse selection in their borrowers.⁵⁵ The resulting barriers to entry in this market gave incumbent banks a comparative advantage over new entrants. In addition to market forces, fiscal and monetary authorities could also shape the structure of the international lending industry. Through implicit or explicit regulation of the acceptance market and of the banks' foreign activities, public authorities could advantage small or large banks in trade finance and overseas lending.

The organization of international bank lending in Britain was a legacy of the past. The City had been a large centre for international trade finance since the mid-nineteenth century, and the London merchant banks had been the first to engage in the financing of international trade through acceptances. Many of these institutions had originally been founded by immigrants to Britain, who exploited connections with the home country in order to extend their activities and give their foreign customers access to the London discount market.⁵⁶ Over time, these banks accumulated extensive information on foreign markets where they specialized.⁵⁷

Starting in the late nineteenth century, a process of amalgamation in English banking led to the emergence of five large commercial banks: the so-called Big Five clearing banks.⁵⁸ Until the First World War (WWI), these banks specialized in lending to the domestic industry. In the

⁵⁴ Winton, 'Diversification and specialization'; Boot and Thakor, 'Relationship banking'; Paravisini, Rappoport and Schnabl, 'Specialization in Bank Lending'; present formal theoretical models showing how 'learning by lending' leads to bank specialization.

⁵⁵ This phenomenon has been described in several formal models; see, for example, Dell'Ariccia, Friedman and Marquez, 'Adverse selection', Dell'Ariccia, 'Asymmetric information', Marquez, 'Competition' and Pavanini and Schivardi, 'Value of information'.

⁵⁶ Chapman, *Merchant banking*.

⁵⁷ Truption, *British banks*, p.132 noted that each acceptance house 'had its own special realm'.

⁵⁸ Sykes, *Amalgamation movement*; Capie and Rodrik-Bali, 'Concentration'

1920s however, the Big Five considerably extended their overseas activities.⁵⁹ Yet these banks also faced adverse selection in foreign markets where merchant banks were already established, especially in central Europe. The merchant banks' informational advantage in these markets allowed them to compete with the large commercial banks in spite of the latter's greater size (and capital).

[[INSERT Figure 3 about Here]]

An analysis of the London banks' portfolios of foreign correspondents confirms that British acceptance houses were more geographically specialized than large commercial banks, and that the former concentrated on countries where they had a historical informational advantage, consistent with the theory of informational capital in bank lending. Figure 3 illustrates this pattern. This figure's maps use data collected in the *Bankers' Almanac* to plot locations of the European correspondents of two merchant banks (Hambros and Schröders) and two of the Big Five banks (Barclays and Midland). Hambros was well known in London for its close connections with Scandinavia. The bank was founded in 1839 by Carl Joachim Hambro, the son of a Copenhagen merchant and banker.⁶⁰ Schröders was founded by Johann Heinrich Schröder, member of a German merchant family who immigrated to London from Hamburg during the Napoleonic Wars.⁶¹ Figure 3 shows clearly that the two merchant banks remained highly specialized in markets where they had historical connections. In the early 1930s, most European correspondents of Hambros were still concentrated in Scandinavian countries whereas nearly all of the Schröders correspondents were located in central Europe. In contrast, both Barclays' and Midland's correspondents were distributed much more evenly across Europe—reflecting the greater geographical diversification of their activities. These banks had a large capital base but no previous connections with certain foreign countries in particular and therefore no incentives to specialize geographically.

⁵⁹ Jones, 'Lombard street', p.188; idem, *British multinational banking*, pp.138-57

⁶⁰ Hambros Bank, *Hambros Bank*, p.4.

⁶¹ Roberts, *Schröders*, p.3.

I confirm that these examples are representative of the pattern observed across all London acceptance houses and commercial banks. For each bank that had at least 20 correspondents abroad, I compute the share of each country in its portfolio of correspondents. I then construct a *Relative Concentration Index* (RCI) measuring the extent to which the bank's portfolio of correspondents deviates from the average portfolio (across all London banks).⁶² This index is defined formally in appendix S3. The advantage of using the RCI is that it offers a relative measure of portfolio concentration; thus, index values are not affected by any selection biases in the *Bankers' Almanac* that result in some countries being under- or over-represented in the average portfolio.⁶³ Results indicate that the acceptance houses had more concentrated portfolios of correspondents than the large commercial banks. The average value of the RCI was 1.12 for the 21 acceptance houses that had more than 20 foreign correspondents, almost double the 0.57 value for the Big Five.⁶⁴

Acceptance houses generally specialized in regions where they had strong historical links. Almost one century after their foundation, the houses of Schröders, Japhets, London Merchant Bank, and Kleinworts—all of which had German origins dating back to the nineteenth century—still had between 34 and 60 per cent of their foreign correspondents located in Germany. Brown Shipley had been established in 1810 by a son of the founder of the US house Brown Brothers and nearly three fourths of its correspondents were still located in the United States in 1930.⁶⁵ More than a quarter of Ruffers' correspondents were located in France, where the firm originated.⁶⁶ Foreign banks that were also established in London naturally exhibited strong specialization towards their home country and some of them also exhibited a German bias in their portfolio of correspondents. For example, geographical proximity allowed the Swiss Banking Corporation to maintain privileged relationships with German customers, which could

⁶² Paravisini, Rappoport, and Schnabl, 'Comparative advantage', pp. 8-9, propose to use this index to measure banks' geographical specialization in lending.

⁶³ See Paravisini, Rappoport, and Schnabl, 'Comparative advantage', pp. 8-9.

⁶⁴ The RCI ranges from 0 to $2(\square - 1)/\square$, where \square is the total number of countries where London (or New York) banks had foreign correspondents. London and New York banks had (respectively) correspondents in 85 and 86 different countries. The results are robust to using an *absolute* measure of portfolio concentration, the classic Herfindahl-Hirschman index. See appendix S3.

⁶⁵ See Ellis, *Heir of Adventure*, on the origins of Brown Shipley.

⁶⁶ See Truutil, *British banks*, p. 155, on the origins of Ruffers.

obtain access to sterling trade finance credits through its London branch. Almost one quarter of this bank's correspondents were located in Germany.

The acceptance houses' informational advantage made it possible for them to compete with the Big Five clearing banks in the market for German and central European loans. In addition, the Bank of England's implicit regulation of the commercial banks also helped the merchant banks of German origins to safeguard their market shares in the region. While British authorities had initially encouraged the clearing banks in their endeavour to develop their overseas activities after the First World War,⁶⁷ there is evidence that the Bank of England sought to discourage them from expanding too aggressively on the continent during the 1920s.⁶⁸ The commercial banks might also have suffered from difficulties in organizing their activities following the amalgamation movement; that movement gave rise to large-scale institutions and the efforts required to standardise practices across domestic branches might have diverted the clearing banks from expanding into new foreign markets.⁶⁹ These institutions' heavy hierarchical structures might also not have offered the flexibility needed to maintain strong personal relationships with foreign correspondents and customers.

According to their total number of correspondents (Austria, Germany, and Hungary), the three market leaders among London banks in central Europe were not the Big Five commercial banks but rather the London branch of the Swiss Banking Corporation and two small acceptance houses (Japhets and Schröders) that had strong historical connections with Germany. The Big Five only accounted for 25 per cent of the total number of central European correspondents of all London banks as opposed to 54 per cent for the acceptance houses. These houses' connections and first-mover advantage – combined with the Bank of England's implicit regulation- allowed them to maintain their market shares in central Europe. This explains why small institutions accounted for such a large share of the British banks' overall exposure to Germany in 1931.

⁶⁷ Jones, 'Lombard Street', p. 188.

⁶⁸ Jones, 'Lombard Street', pp. 188-192; Turner, *Banking in crisis*, pp. 178-179

⁶⁹ Sykes, *Amalgamation movement*, pp.180-186

In contrast to London, New York did not emerge as an international trade finance centre until the 1920s. Under the National Bank Act of 1864, national banks were not allowed to engage in trade finance through acceptances or to establish foreign branches.⁷⁰ In the late 1910s and early 1920s, however, officials at the Federal Reserve Board undertook substantial efforts to develop a market for acceptances in New York.⁷¹ The Federal Reserve Act of 1913 finally allowed member banks to accept bills of exchange, and the demand for dollar credits increased during the war and post-war years. Therefore, the New York acceptance market developed considerably in the 1920s.

When New York emerged as a large international financial centre, two forces contributed to give an advantage to the largest banks in trade finance. First, most US banks were new to foreign lending/trade finance in the interwar period and no financial institutions had already established strong lending relationships with foreign customers. So in comparison to the Big Five in Britain, the largest American commercial banks faced less severe adverse selection from other US financial institutions as well as weaker barriers to entry in foreign markets. Second, banking regulation limited the ability of the small Federal Reserve member banks to extend trade finance credits. Under the Federal Reserve Act of 1913, member banks were required to keep the ratio of their outstanding acceptances (trade credit guarantees) to paid-up capital and reserves at less than 1.⁷² Mandating such a link (between granting acceptances and a bank's absolute level of capital) clearly disadvantaged the small member banks in the business of trade finance.⁷³

Data on New York banks' foreign correspondents reveal that private banks, acceptance corporations, and branches of foreign banks also exhibited strong country specialization in accordance with their respective origins.⁷⁴ A few of these institutions specialized in Germany. For example, Hallgarten, Ladenburg Thalmann (both founded by bankers of German-Jewish

⁷⁰ Phelbs, *Foreign expansion*, p. 92; Vigreux, *Credit par acceptance*, p. 38.

⁷¹ Ferderer, 'Institutional innovation'; Eichengreen and Flandreau, 'Rise of the Dollar'.

⁷² Vigreux, *Credit par acceptance*, pp. 39-40.

⁷³ Although neither private nor non-member banks were subject to Federal Reserve regulation, few of them enjoyed any competitive advantage abroad.

⁷⁴ For example, the private houses Iselin & Co. (established by the Swiss-born banker Adrian G. Iselin) and Lazard Brothers (founded by three French brothers in the mid-nineteenth century) had, respectively, 69 and 48 per cent of their correspondents in Switzerland and France.

background), IAB and Schrobanco all had more than one third of their correspondents in Germany.⁷⁵ However, these houses played a relatively marginal role in the American trade finance market. According to their total number of central European correspondents, the three market leaders among New York banks in central European lending were the three largest US financial institutions of the time (in terms of total assets and capital): Chase National Bank, National City Bank, and Guaranty Trust. Whereas the three largest British banks (Midland, Lloyds, and Barclays) accounted for only 18 per cent of the total number of central European correspondents of all London banks, the three biggest US banks accounted for some 42 per cent of the New York banks' central European correspondents. In the United States, then, trade finance and central European lending remained mostly the preserve of the largest commercial banks.

V

This paper has presented new evidence regarding the channels through which the 1931 global financial crisis was transmitted. I used new bank-level data and archival material in arguing that the July 1931 freeze of central European assets imperilled much fewer US banks than British banks. That difference in transmission of the central European crisis to these creditor countries was related to the industrial organization of international bank lending, which was clearly different in the two countries. Most of British lending on the continent was done by small merchant banks/acceptance houses with historical links to borrowing countries where they specialized. By contrast, US international bank lending was mostly done by the largest American commercial banks. While the central European crisis only affected small financial houses that specialized in trade finance, these institutions played a much more substantial role - and were more central to the financial system - in Britain than in the United States. Those differences explain why, in the summer of 1931, London and New York bankers had entirely different perceptions of the German crisis.

⁷⁵ See Supple, 'A business elite', on the origins of Hallgraten and Ladenburg Thalmann.

The paper's findings complement those of the recent literature. Billings and Capie show that British commercial banks fared well during the 1930s and were not directly impacted by the German crisis.⁷⁶ Accominotti nevertheless demonstrates that the central European crisis affected the London merchant banks and contributed to the sterling crisis of September.⁷⁷ Richardson and Van Horn show that the European financial crisis did not directly impair the large New York City commercial banks' balance sheets (the banks which were the most exposed to foreign countries) because they had anticipated it and increased their capital in previous years.⁷⁸ This paper supports these findings and offers a complementary explanation – based on market structure - for why the German crisis endangered more London banks than New York banks.

The 1931 episode illustrates the role of informational advantages and regulation in international lending as well as the banking structure's importance for a country's ability to absorb shocks imported from abroad. Almost one hundred years after their foundation, several London merchant banks of German origins were still heavily specialized in central European lending and had a lead over the large commercial banks in these markets. When confronted with a shock such as the German crisis, the British acceptance houses' high degree of specialization (low diversification) could have revealed a problem for the whole British banking system. Although the British and US banks' aggregate central European exposure remained limited relative to the size of the financial system, the distribution of frozen credits across banks mattered crucially for how the crisis spread from the debtor to the creditor countries.

This specialized structure of the British banking system attracted much praise from its contemporaries.⁷⁹ In quiet times, the extensive information held by the London merchant banks on debtors abroad—when combined with their expertise in foreign lending—likely made them very efficient intermediaries of foreign credit. The US National Monetary Commission itself admired the efficient organization of the City of London, and US monetary authorities viewed it

⁷⁶ Billings and Capie, 'Financial crisis'

⁷⁷ Accominotti, 'London merchant banks'.

⁷⁸ Richardson and Van Horn, 'In the eye'.

⁷⁹ According to the Macmillan Report of 1931, for example, the City of London was 'the most highly organized international market for money in the world. [...] Its Accepting Houses and Discount Houses provide unequalled facilities for the financing of national and international commerce'. Quoted in Gillett Brothers, *Bill on London*, p. 8.

with envy as they sought to develop, in the 1920s, a large acceptance market so as to strengthen New York's status as an international financial centre. However, the risks of the London money market's highly specialized structure were exposed first at the outbreak of WWI, and then in the summer of 1931 when central European borrowers found themselves unable to reimburse their foreign debts. More severe banking troubles were avoided, partly thanks to the Bank of England's rediscounting facilities for frozen credits (and the sterling pound's depreciation). The United States, in contrast, endured a serious banking crisis in September-December 1931 when numerous banks failed across the country. This panic was in part due to the Federal Reserve's monetary policy tightening following Britain's departure from the gold standard. However, as severe as those troubles proved to be, they were not a consequence of the banks' balance sheet exposure to central European credits.

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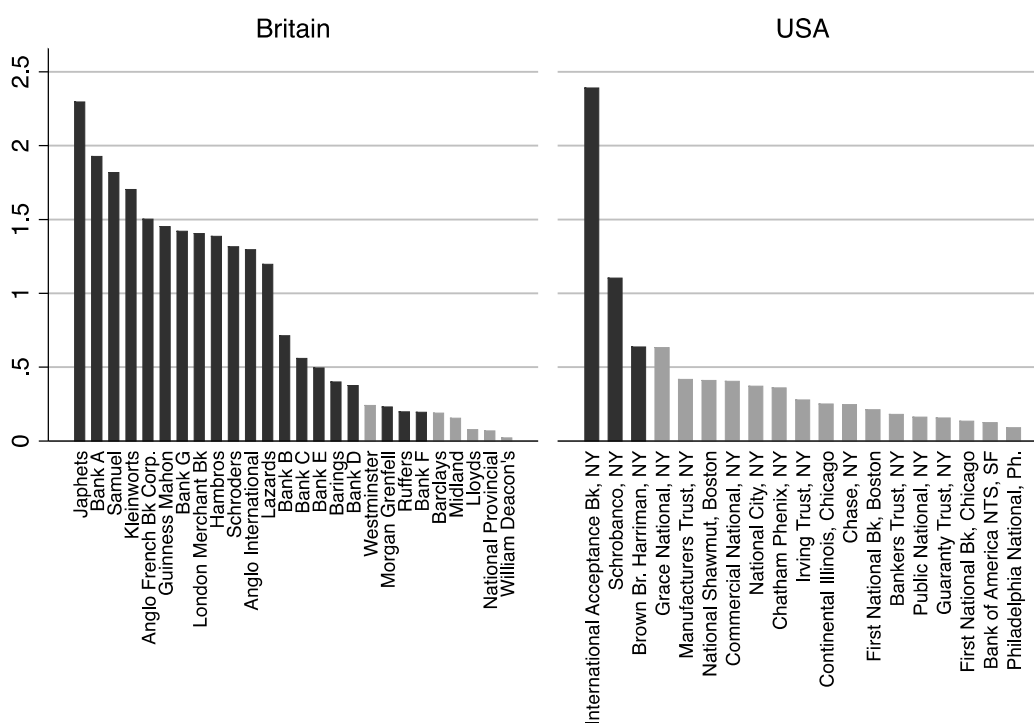
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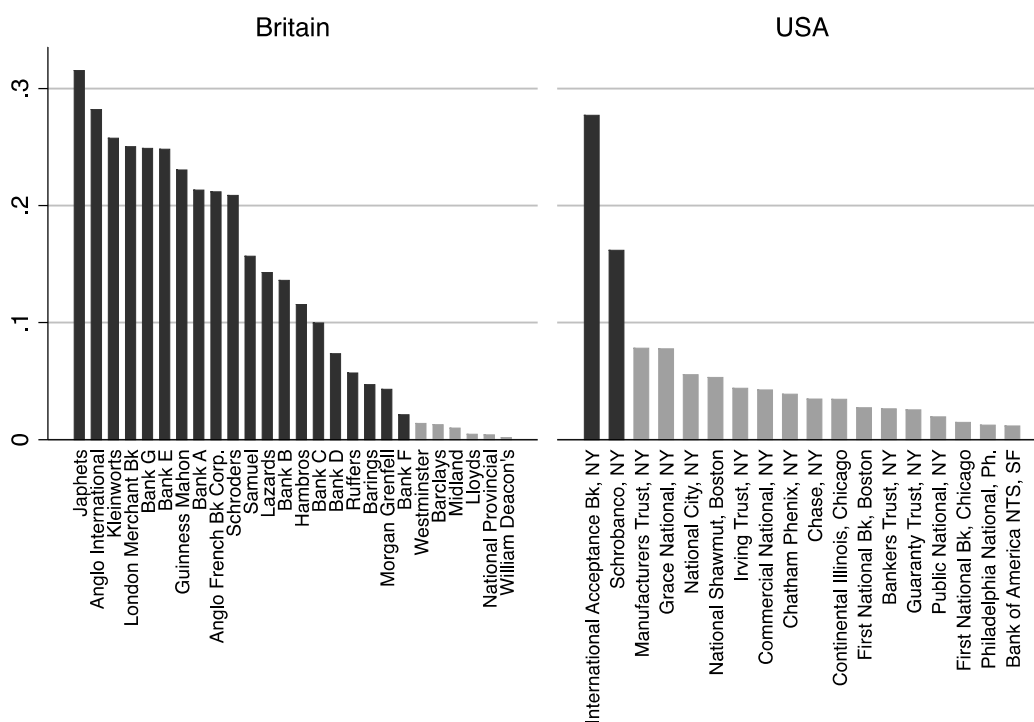
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Figure 1. US and British banks' central European exposure
A. Ratio of central European credits to paid-up capital and reserves



B. Ratio of central European credits to total assets

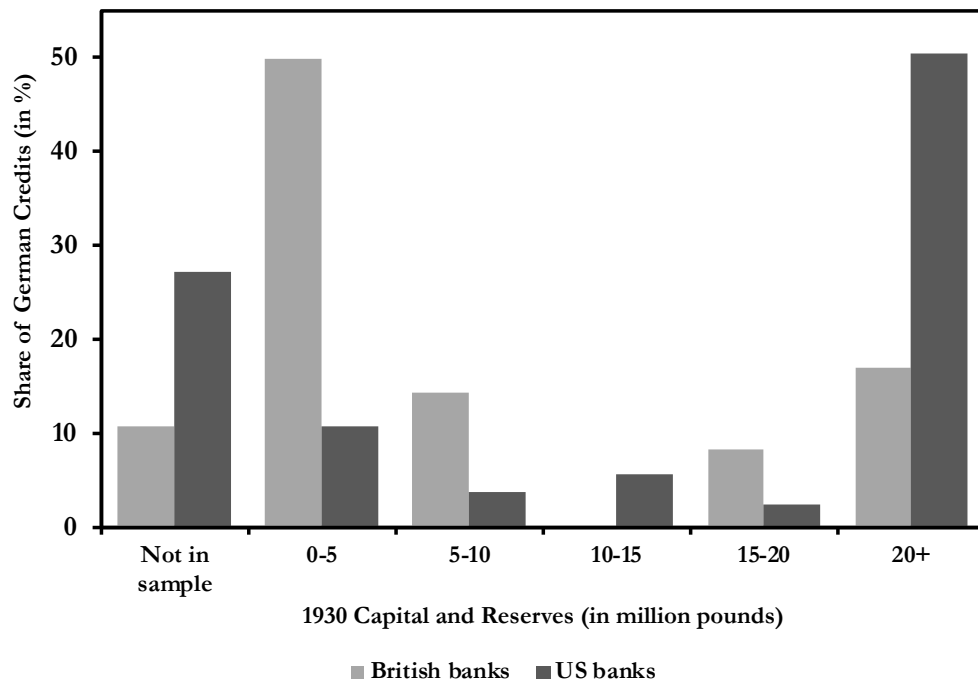


Source: Author's computations (see appendix S2). For each bank, the figure reports the ratio of 1931 central European credits to 1930 paid-up capital and reserves (panel A) and 1930 total assets (panel B). Light-grey bars: commercial banks. Dark-grey bars: acceptance houses. Panel B does not include Brown Brothers Harriman because total assets are unavailable for this bank. Ratios of central European credits to capital and reserves for London banks might differ from those reported by Accominotti, 'London merchant banks', because the latter only includes acceptance credits and excludes other types of short-term credits.

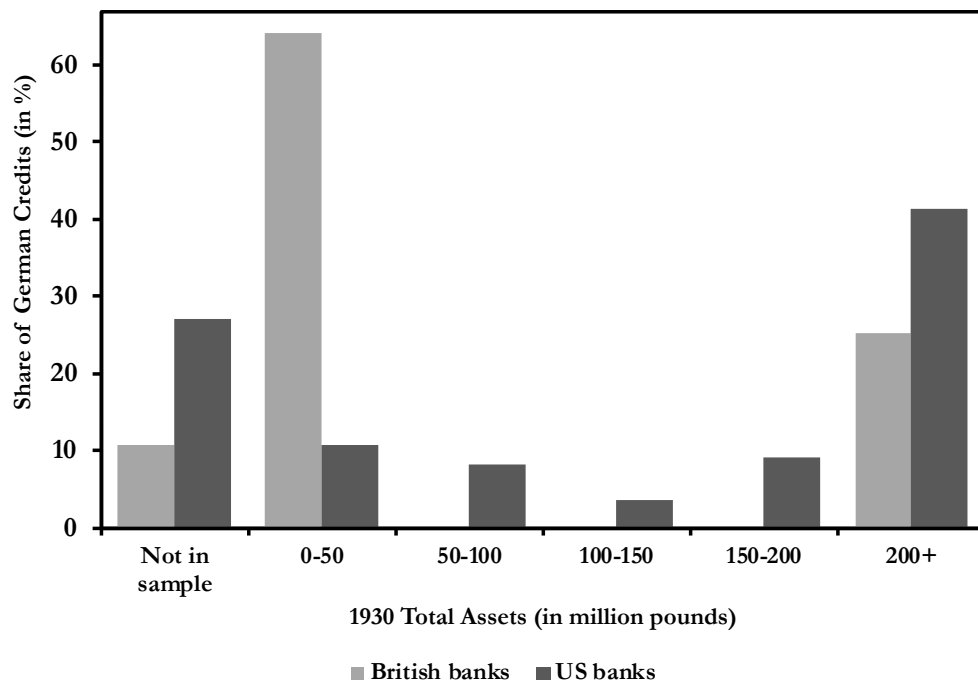
Figure 2. Distribution of German credits across banks

British versus US banks

A. By paid-up capital and reserves



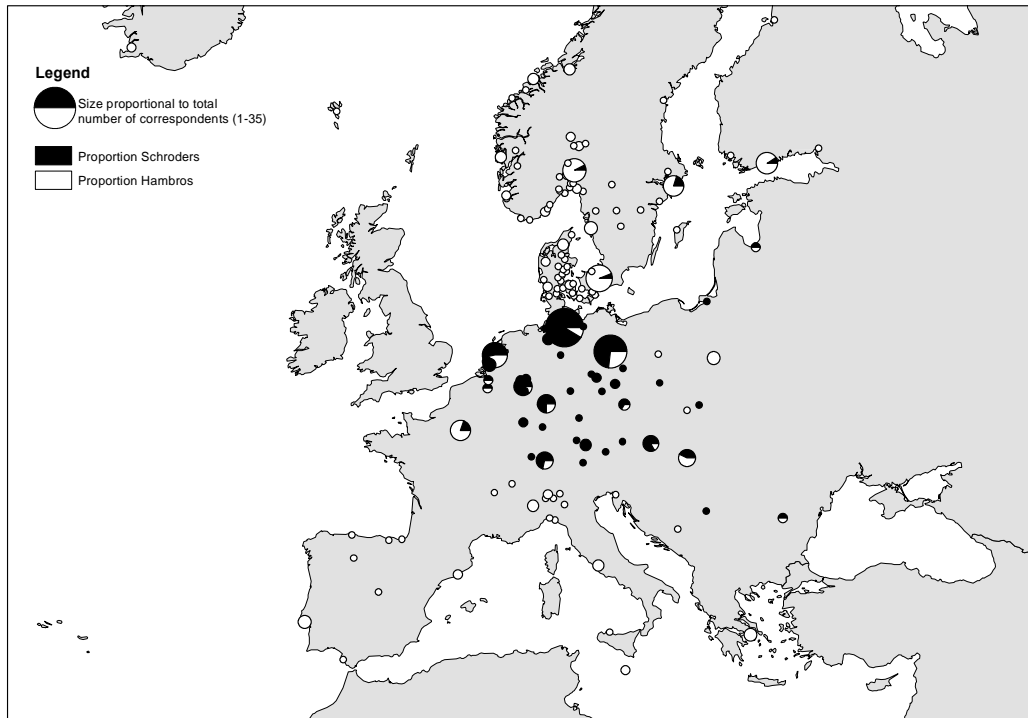
B. By total assets



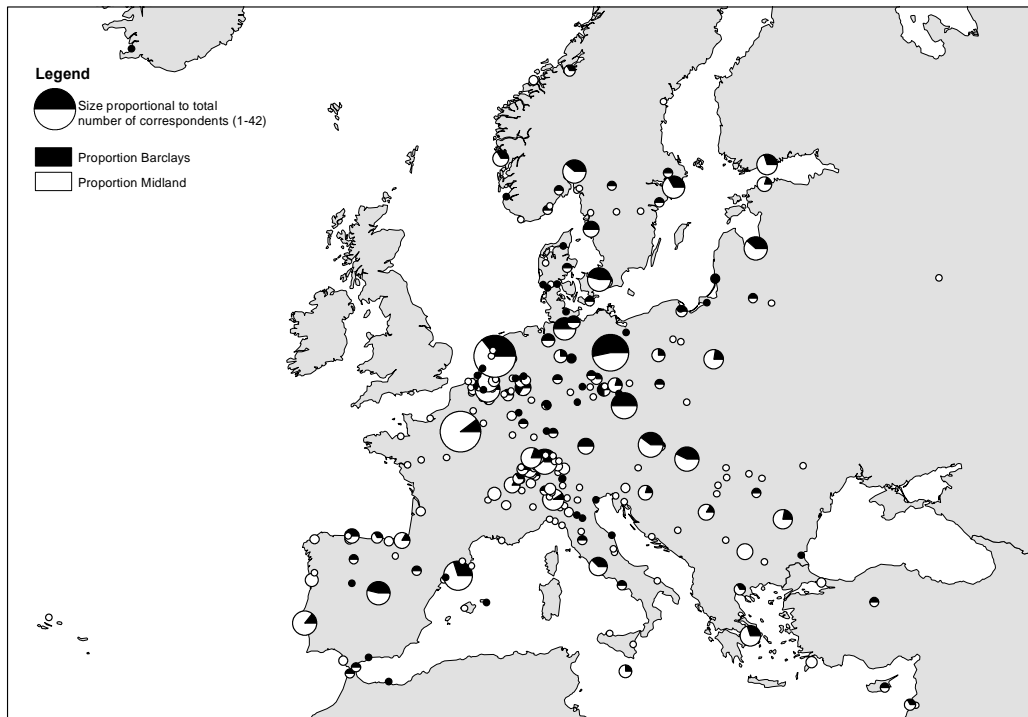
Source: Author's computations (see text and appendices S1 and S2).

Figure 3. London banks' European correspondents

A. Acceptance houses: Schröders and Hambros



B. Big Five: Barclays and Midland



Source: Author's computations based on the *Bankers' Almanac*, 1930/1931 (see text). The size of the circles varies proportionately to the total number of correspondents of, respectively, Schröders and Hambros (panel A), and Barclays and Midland (panel B), in each city and the symbols show the proportion of each bank in that total.

Table 1. British banks' central European exposure and balance sheet changes, 1931

	24 British banks			28 British banks		
	Percentage change in:			Percentage change in:		
	Total Assets I	Deposits II	Liquid Assets III	Total Assets IV	Deposits V	Liquid Assets VI
Central European credits/capital	-0.172*** (-3.26)	-0.294*** (-4.50)	-0.238*** (-3.79)			
Central European correspondents				-0.214* (-1.93)	-0.312* (-1.96)	-0.314** (-2.30)
Ln(total assets)	3.939 (0.96)	8.733 (1.71)	4.454 (0.91)	7.194* (1.76)	12.558** (2.14)	8.720* (1.73)
Capital ratio	0.223 (0.52)	0.778 (1.48)	0.552 (1.10)	0.724* (1.82)	1.565** (2.74)	1.202** (2.45)
Liquidity ratio	-0.083 (-0.59)	0.197 (1.13)	-0.007 (-0.04)	-0.020 (-0.14)	0.309 (1.48)	0.082 (0.46)
Acceptance house	4.063 (0.28)	0.298 (0.02)	-1.890 (-0.11)	-14.742 (-1.43)	-36.217** (-2.46)	-29.456** (-2.32)
Intercept	-26.741 (-1.03)	-61.886* (-1.93)	-36.705 (-1.19)	-40.810* (-1.94)	-77.847** (-2.59)	-52.886* (-2.05)
N	24	24	24	28	28	28
R2	0.629	0.788	0.707	0.549	0.658	0.639

Note: Dependent variable: percentage change in total assets (columns I and IV), total deposits (columns II and V) and liquid assets (columns III and VI) between December 1930 and December 1931. 'Liquid assets' are defined as the sum of cash, balances with the Bank of England, balances with other banks, call money, bills and investments (ie. securities). 'Central European credits/capital' is the ratio of 1931 total frozen credits (Austria, Germany and Hungary) to 1930 capital and reserves (in per cent). 'Central European correspondents' is the total number of correspondents in Austria, Germany and Hungary. 'Capital ratio' is the 1930 ratio of capital and reserves to total assets (in per cent). 'Liquidity ratio' is the 1930 ratio of cash and call money to total deposits (in per cent). 'Acceptance house' is a dummy variable taking the value 1 when the bank is an acceptance house. The sample for regressions I-III is the same as in figure 1 but excludes Bank C and Bank G because deposits are not available for these banks. The sample for regressions IV-VI is the same as in columns I-III augmented for four London clearing banks (Coutts, Glyn Mills, Martins Bank and National Bank). All regressions are estimated using OLS. t-statistics are in parentheses. *: significant at the 10% level; **: significant at the 5 % level; ***: significant at the 1% level. Sources: see text and appendix S2.

Table 2. US Banks' Central European Exposure and Balance Sheet Changes, 1931

	18 US banks			52 NYC banks		
	Percentage change in:			Percentage change in...		
	Total Assets I	Deposits II	Liquid Assets III	Total Assets IV	Deposits V	Liquid Assets VI
Central European credits/capital	0.116 (0.85)	0.110 (0.72)	0.002 (0.01)			
Central European correspondents				-0.079 (-1.14)	-0.095 (-1.03)	-0.178 (-1.56)
Ln(total assets)	-1.421 (-0.39)	-2.958 (-0.73)	-8.925 (-1.60)	4.553*** (3.16)	5.556*** (2.91)	8.442*** (3.57)
Capital ratio	3.786* (1.88)	5.070** (2.24)	8.536** (2.75)	0.922*** (3.12)	1.017** (2.59)	1.873*** (3.86)
Liquidity ratio	-1.050* (-2.11)	-1.130* (-2.02)	-1.418* (-1.85)	0.494** (2.47)	0.776*** (2.93)	-0.204 (-0.62)
National bank	7.979 (0.75)	6.815 (0.57)	6.939 (0.42)	-8.151* (-1.75)	-9.903 (-1.60)	-4.577 (-0.60)
Acceptance house	-45.223* (-1.88)	-54.671* (-2.02)	-38.390 (-1.04)	-23.140** (-2.48)	-24.572* (-1.98)	-23.427 (-1.53)
Intercept	-38.017 (-0.83)	-41.045 (-0.80)	-31.055 (-0.44)	-66.759*** (-6.75)	-80.942*** (-6.17)	-71.708*** (-4.42)
N	18	18	18	52	52	52
R2	0.606	0.653	0.624	0.532	0.503	0.384

Note: Dependent variable: percentage change in total assets (columns I and IV), total deposits (columns II and V) and liquid assets (columns III and VI) between December 1930 and December 1931. 'Liquid assets' are defined as the sum of cash and due from banks, reserve with the Federal Reserve Bank, US government securities and other bonds, stocks and securities. 'Central European credits/capital' is the ratio of 1931 total frozen credits (in Austria, Germany and Hungary) to 1930 capital, surplus, undivided profits and contingency reserves (in per cent). 'Central European correspondents' is the total number of correspondents in Austria, Germany and Hungary. 'Capital ratio' is the 1930 ratio of capital, surplus, undivided profits and contingency reserves to total assets (in per cent). 'Liquidity ratio' is the 1930 ratio of cash, due from banks and reserves with the Federal Reserve Bank to total deposits (in per cent). 'National bank' and 'Acceptance house' are dummy variables taking the value 1 when the bank is, respectively, a nationally chartered bank and an acceptance house. The sample for regressions I-III is the same as in figure 1 but excludes Brown Brothers Harriman & Co. because deposits are not available for this bank. The sample for regressions IV-VI includes all New York City banks for which balance sheet data are available (see appendix S2). All regressions are estimated using OLS. t-statistics are in parentheses. *: significant at the 10% level; **: significant at the 5 % level; ***: significant at the 1% level. Sources: see text and appendix S2.

Appendix S1

Estimates of British and US Banks' Aggregate Exposure to Germany, 1931

Several published and archival sources give estimates of the aggregate amount of German short-term credits owed to British and American banks in July 1931. The Wiggin Committee of Experts set up in the summer 1931 to inquire about Germany's borrowing needs, provided an estimate of the total amount of German foreign short-term debts outstanding on 28 July 1931 and of its distribution by a. creditor countries; b. types of lenders (banks, industry and commerce, other); and c. types of borrowers (banks, industry and commerce, public bodies, Reichsbank and Golddiscontbank, other). A revised version of this estimate was published in *The Economist* on 23 January 1932 (*The Economist*, "Reparations and War Debts Supplement"). Harris (1935, p. 20) however notes that this estimate is "only approximately correct". German authorities also estimated the amount of Germany's foreign short-term and long-term debts broken down by creditor countries and types of lender (banking versus non-banking creditors). Such estimates can be found at the Bundesarchiv in Berlin and Koblenz for 29 February 1932 (Reichsfinanzministerium, R2/13653), 30 September 1932 (Ludwig Kastl papers, N1138/27) and 28 February 1933 (Reichsfinanzministerium, R2/13672), and at the Archives of the Federal Reserve Bank of New York for November 1931 (File 261.12, "Note to the Foreign Creditors Committees and Signatories of the German Credit Agreement of 1932", 5 April 1932). Finally, documents from the Bank of England Archive and the Minutes of the Hearings of the US Senate's Committee on Finance held from December 1931 to February 1932 on the Sale of Foreign Bonds or Securities in the United States give the aggregate amounts of German short-term (frozen) credits held by, respectively, British and US banks. Discrepancies between these various estimates are due to differences in classification of the credits as short- versus long-term and to the coverage of creditor banks included in the surveys on which these various estimates are based. Below are additional details on how I estimated the total German short-term credits of British and US banks in 1931.

I. BRITISH BANKS

The estimate of the aggregate amount of British banks' 1931 German Standstill credits used in the present paper is based on returns made twice a year by all London clearing banks and acceptance houses to the Joint-Committee of British short-term creditors. Such estimates can be found at the Bank of England Archive. A summary table was prepared by Richard Sayers for his monograph on the Bank of England's history and is kept in a separate file (Bank of England Archive, ADM33/21). The table includes the amounts of the British banks' outstanding German Standstill credits from 31 July 1931 to 28 February 1939. The estimate covers all British clearing banks and acceptance houses but excludes the German credits held by Scottish banks and by the London branches of foreign banks. The estimate of £65 million for 31 July 1931 is 25 per cent below that reported by the Wiggin Committee but the figure for 30 September 1932 is close to the estimate made by the German administration at the same date (Bundesarchiv, Koblenz, Ludwig Kastl Papers, N1138/27). I chose to rely on the Bank of England's rather than the Wiggin Committee's estimate because the former is based on direct returns made by British creditor banks.

II. US BANKS

The Minutes of the Hearings of the US Senate's Committee on Finance held from December 1931 to February 1932 give invaluable information on the US banks' aggregate German short-term

credits. When questioned by Committee members about the amount of outstanding German short-term debts owed to American banks, the Chairman of National City Bank Charles E. Mitchell noted that this amount was situated between \$600 million and \$700 million (p. 83).

Winthrop W. Aldrich, President of Chase National Bank, estimated “the [German] short-term commitments to American banks” to be “somewhere in the vicinity of \$650,000,000” and noted that this amount was held by 100 US financial institutions (pp. 409-411). Aldrich also gave the following details about the American banks’ frozen German credits:

- German short-term trade finance credits held by American banks amounted to \$520 million in July 1931;
- The German Golddiscountbank owed a \$50 million debt to a group of American banks;
- American banks held a participation of “somewhat over 60 per cent” (ie. \$75 million) in the \$125 million loan to the German Government granted in October 1930 by a consortium of financial institutions headed by Lee Higginson & Co.;
- American banks had also granted short-term credits to German provincial states and municipalities. Aldrich only gave an estimate of the short-term debt owed to all foreign creditors by German states and municipalities. However, a document found at the Bundesarchiv in Koblenz (Ludwig Kastl papers, N1138/30) gives the amount of short-term debts owed by German states and municipalities to American banks on 31 July 1931 (the equivalent of \$9 million).

By adding these various amounts, I arrived at an estimate of 654 Mio USD for the total German short-term debts owed to American banks in 1931. This estimate is 13 per cent higher than the estimate for July 1931 published in *The Economist*. However, the figure given by *The Economist* underestimates the amount of short-term credits granted by American banks to German public bodies because the Lee Higginson loan appears to be classified as a long-term credit. The data on individual US banks’ exposure to Central Europe used in the present paper include the banks’ participation in the Lee Higginson loan as part of their frozen German credits.

Appendix S2

Sources for Bank-Level Data

Balance Sheets, Central European Frozen Credits and Correspondents

I. BRITISH BANKS' BALANCE SHEETS AND CENTRAL EUROPEAN CREDITS

Balance sheets

The sample includes 20 London acceptance houses: Anglo French Banking Corporation, Anglo-International Bank Ltd., Baring Bros. & Co. Ltd., Guinness Mahon & Co., Hambros Bank Ltd., S. Japhet & Co. Ltd., Lazards Brothers & Co. Ltd., London Merchant Bank Ltd., Morgan Grenfell & Co. Ltd., Kleinworts Sons & Co., A. Ruffers & Sons Ltd, M. Samuel & Co. Ltd, J. Henry Schröder & Co. as well as seven institutions (identified as banks A to G) whose balance sheets were communicated by the archivists on the condition that their anonymity be preserved. The sample also includes the 10 London joint-stock clearing banks: Barclays, Coutts and Co., Glyn Mills and Co., Lloyds Bank Ltd., Martins Bank Ltd., Midland Bank Ltd., National Bank Ltd., National Provincial Bank Ltd., Westminster Bank Ltd., and William Deacon's Bank Ltd.

End-1930 and end-1931 balance sheets data for the London acceptance houses are from Accominotti (2012) and originally come from various archival records (Bank of England Archive, Guildhall Library Manuscripts) as well as published sources (Diaper, 1986, Orbell, 1985, Roberts, 1992). See Accominotti (2012) for details on the sources used for each bank in the sample. Two Anglo-foreign banks were added to the sample of acceptance houses (Anglo French Banking Corporation and Anglo-International Bank Ltd.). Data on the Anglo-French Banking Corporation are from *The Economist* ("Anglo French banking Corporation", 23 January 1932, pp. 168-169) and the *Manchester Guardian* (18 January 1932, p. 13). Data on the Anglo-International Bank Ltd. are from the bank's *Reports of the Directors*. Balance sheet data for the London joint-stock clearing banks are from the "Monthly Statements of London Clearing Banks" published in *The Economist*, various issues.

Central European credits

Amounts of Central European frozen credits held in 1931 are available for the 20 acceptance houses in the sample as well as 6 joint-stock clearing banks.

Acceptance houses

Amounts of Central European credits held by the London acceptance houses in the sample in 1931 are from Accominotti (2012). Central European credits are for the closest date available to the burst of the German crisis. The dates are June 1931 for Bank E; July 1931 for Baring Bros. & Co., Kleinworts, Sons & Co., and J. Henry Schroder & Co.; September 1931 for Morgan Grenfell & Co. Ltd., and Hambros Bank Ltd.; December 1931 for Anglo French Banking Corporation, Anglo-International Bank Ltd., S. Japhet & Co. Ltd., Lazards Brothers & Co. Ltd., London Merchant Bank Ltd., A. Ruffers & Sons Ltd., Bank B, Bank C, Bank D, and Bank F; March 1932 for M. Samuel & Co. Ltd.; April 1932 for Guinness Mahon & Co.; December 1932 for Bank A; and December 1936 for Bank G. Central European frozen credits consist of all short-term credits to Germany, Austria and Hungary except for Kleinworts, Sons & Co., J. Henry Schroder & Co., and Bank F, where they are for Germany only.

Barclays Bank Ltd., Lloyds Bank Ltd., National Provincial Bank Ltd., William Deacon's Bank Ltd.
Billings and Capie (2011, p. 210)

Midland Bank Ltd.

Germany: HSBC Archives, file # 0030/192; “Midland's Commitment as Creditor of German Banks (31 July 1931)”. This document gives the list of all Midland’s credits to German banks on 31 July 1931.

Austria and Hungary: Billings and Capie (2011, p. 210).

Westminster Bank Ltd.

Germany: Royal Bank of Scotland Archives, WES/1174/185, “Actual German commitments outstanding at date of 31/7/1931”.

Austria and Hungary: Billings and Capie (2011, p. 210).

Central European credits are for June 1931 for Westminster Bank Ltd.; July 1931 for Midland Bank Ltd., and 1931 (unspecified month) for Barclays Bank Ltd., Lloyds Bank Ltd., National Provincial Bank Ltd., and William Deacon’s Bank Ltd. For Lloyds Bank Ltd. and National Provincial Bank Ltd., frozen credits are for Germany only.

II. US BANKS’ BALANCE SHEETS AND CENTRAL EUROPEAN CREDITS

Balance Sheets

The sample includes 53 New York City banks: Amalgamated Bank, Banca Commerciale Italiana Trust Company, Banco di Napoli Trust Company, Bank of Athens Trust Company, Bank of Manhattan Trust Company, Bank of New York and Trust, Bank of Sicily Trust Company, Bank of Yorktown, Bankers Trust Company, Bronx County Trust Company, Brooklyn Trust Company, Brown Brothers Harriman & Co., Central Hanover Bank and Trust Company, Chase National Bank, Chatham Phenix National Bank and Trust Company, Chemical Bank and Trust Company, Columbus Bank, Commercial National Bank and Trust Company, Continental Bank and Trust Company, Corn Exchange Bank Trust Company, County Trust Company, Dunbar National Bank, Empire Trust Company, Fifth Avenue Bank, First National Bank of New York, French American Banking Corporation, Fulton Trust Company, Grace National Bank, Guaranty Trust Company, Harbor State Bank, Harriman National Bank and Trust Company, Hellenic Bank Trust Company, Hibernia Trust Company, International Acceptance Bank Ltd., Irving Trust Company, Lawyers Trust Company, Liberty National Bank and Trust Company, Manufacturers Trust Company, Marine Midland Trust Company, Merchants Bank of New York, National Bank of Yorkville, National City Bank, National Safety Bank and Trust Company, New York Trust Company, Pennsylvania Exchange Bank, Public National Bank and Trust Company, J. Henry Schroder Banking Corporation (Schrobanco), Sterling National Bank and Trust Company, Title Guarantee and Trust Company, Trade Bank of New York, Underwriters Trust Company, United States Trust Company of New York, and Washington National Bank.

The sample also includes 6 national banks of other central reserve cities: Bank of America National Trust Savings Association (San Francisco), Continental Illinois Bank and Trust Company (Chicago), First National Bank of Boston (Boston), First National Bank of Chicago (Chicago), National Shawmut Bank (Boston), and Philadelphia National Bank (Philadelphia).

End-1930 and end-1931 balance sheets for these banks come from various sources. Data for New York state member banks are from the Board of Governors of the Federal Reserve System’s *Reports of Condition* (or *Call Reports*). The December 1930 *Call Reports* were unfortunately not preserved for national banks. However, the Office of the Comptroller of the Currency published these banks’ main balance sheet items in its *Individual Statement of Conditions of National Banks*. I relied on this source for national banks. I completed these sources for other banks using *Moody’s Manual of Investments* (various issues) and Tyng (1931). International Acceptance Bank’s 1931 balance sheet comes from *Statements of the Manhattan Company and Constituent Units*. Brown Brothers Harriman & Co.’s “Statements of Condition” located at the New York Historical Society Library (Records of

Brown Brothers Harriman, MS78, box 87, folder 3) give this house's balance sheet but the Statement is only available as of December 1933 and, therefore, the bank is excluded from the sample on which table 2's regressions are based. For Continental Illinois Bank and Trust Company (nationally chartered in 1933), I rely on Postel-Vinay (2016)'s dataset originally constructed from the Illinois Auditor of Public Accounts' *Statements of State Banks of Illinois*.

Central European Credits

Amounts of Central European frozen credits held by 19 US banks in 1931 are from various archival and published sources. These amounts are those reported at the closest date available to the imposition of exchange controls in Germany, although the exact month varies across the sample. Following are details on the sources used for each particular bank:

Bankers Trust Company (New York)

Source: Bundesarchiv, Berlin, Berliner Büro des Bankers Trust Company, New York, R111/242, "Form of return of aggregate amounts of acceptances and other forms of indebtedness given to bank debtors in Germany or guaranteed by bank debtors in Germany included in the above agreement. To be rendered to the Deutsche Golddiscontbank in respect of claims to be taken over. Rendered by Bankers Trust Company." 18 December 1931.

This form gives the amount of Bankers Trust's claims on German banks in December 1931 and distinguishes between "acceptances" and "other forms of indebtedness". Bankers Trust also participated in the Lee Higginson syndicate loan to the German government but I could not find the amount of its involvement in this credit.

Bank of America National Trust and Savings Association (San Francisco)

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 6 December 1932 (International Banking Department).

The report gives a list of Bank of America's German and Austrian credits classified under "slow" or "doubtful" assets. German credits include the bank's participation in the Lee Higginson syndicate loan to the German Government. I estimated Bank of America's amount of frozen credits outstanding in July 1931 assuming the same percentage decline in German credits as for Chase National Bank between July 1931 and December 1932 (ie. 25 per cent).

Brown Brothers Harriman & Co. (New York)

Source: New York Historical Society Library, Records of Brown Brothers Harriman, MS78, Box 21, Folder 23, Consolidated Statement of Losses on Stillhalte Agreement.

This folder contains a table with Brown Brothers Harriman & Co.'s total credit lines to German, Austrian and Hungarian customers as of July 1931.

Chase National Bank (New York)

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 23 October 1931.

The report gives the total amount of Chase National Bank's German commitments (including those of the London branch) and its reduction since 31 July 1931. German commitments include the bank's participation in the Lee Higginson syndicate loan to the German Government and in the syndicate credit to the Deutsche Golddiscontbank. The Report's section on Chase's Foreign Department also gives the amounts of credit lines to Austria and Hungary as of October 1931 (under "slow and doubtful debts").

Chatham Phenix National Bank and Trust (New York)

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 13 November 1931.

The report's section on Chatham Phenix's Foreign Department gives the amounts of all credit lines to Germany, Austria and Hungary (under "slow and doubtful debts"). German credits include the bank's participation in the Lee Higginson syndicate loan to the German government.

Commercial National Bank and Trust (New York)

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 27 November 1931.

The report's section on Commercial National Bank and Trust's Foreign Department contains a summary table that gives the amount of the bank's outstanding credit lines to Germany, Austria and Hungary. The table distinguishes between "Loans secured", "Loans unsecured", "Overdrafts" and "Acceptances". German credits include Commercial National Bank and Trust's participation in the syndicate credit to the German Golddiscontbank.

Continental Illinois National Bank and Trust (Chicago)

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 31 March 1933.

The Report's section on Continental Illinois' Foreign Department gives the total amount of the bank's German commitments as of 31 July 1931. German credits include the bank's participation in the Lee Higginson syndicate loan to the German Government. The amounts of the bank's Austrian and Hungarian credits are not reported.

First National Bank of Boston (Boston)

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 11 December 1931.

The Report's section on the First National Bank of Boston's Foreign Department gives the total amount of the bank's acceptances, overdrafts and loans to Germany, Austria and Hungary as of 11 December 1931. A note states that a 10 per cent reduction in German Standstill claims "applied to the amount outstanding at the time the original agreement was made". The German loans also include the bank's participation in the Lee Higginson syndicate loan to the German government as well as in the syndicate loan to the German Golddiscontbank. Hungarian credits include the bank's participation in a short-term loan to the Kingdom of Hungary.

First National Bank of Chicago (Chicago)

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 31 July 1931.

The Report gives the aggregate amount of the First National Bank of Chicago's and Foreman State National Bank's German credits (including bankers' acceptances, special deposits and investments). Foreman State National Bank was liquidated and its assets were sold to the First National Bank of Chicago in 1931. German credits include the bank's participation in the Lee Higginson syndicate loan to the German government. The amounts of the bank's Austrian and Hungarian credits are not reported.

Grace National Bank (New York)

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 21 November 1931.

Comments at the end of the Report give the total amount of used and unused credit facilities granted by Grace National Bank to customers in Germany, Austria and Hungary as of 21 November 1931 and the decrease in these amounts since the previous examination in May. I reported used facilities only. German loans include the bank's participation in the syndicate loan to the German Golddiscontbank as well as in a loan to the Kingdom of Hungary. The report also includes a summary table with the amounts of the bank's loans, overdrafts and acceptances to Germany,

Austria, Hungary and other foreign countries. The amounts in this table slightly differ from those reported in the general comments.

Guaranty Trust Company (New York)

Source: Guaranty Trust Company of New York, *Annual Report*, 1933.

In the 1933 Annual Report, the President of the Guaranty Trust Company William C. Potter gives the amount of Guaranty Trust's "notes and acceptances of German banks and concerns" as of the end of 1932 and 1933. This amount does not appear to include loans to the German government and municipalities. However, Guaranty Trust did not participate in the Lee Higginson syndicate loan to the German government in 1930 (see *New York Times*, "\$125,000,000 Credit Ready for Germany", 13 October 1930) and does not appear to have granted any short-term credits to German provinces and municipalities (see Bundesarchiv, Koblenz, Ludwig Kastl Papers, N1138/30). The amounts of the bank's Austrian and Hungarian credits are not reported. I estimated Guaranty Trust's amount of frozen credits outstanding in July 1931 assuming the same percentage decline in German credits as for Chase National Bank between July 1931 and December 1932 (ie. 25 per cent).

International Acceptance Bank Inc. (New York)

Source: US National Archives, Records of the Federal Reserve System, File #421.2-15, Report of the Federal Reserve Board on International Acceptance Bank Inc., 12 September 1931.

The report contains a summary table with the geographical breakdown of all credits granted by International Acceptance Bank as of September 1931. German loans include the bank's participation in the Lee Higginson syndicate loan to the German government (which is valued at half its nominal value in the books) as well as in the syndicate loan to the German Golddiscontbank. The International Acceptance Bank was supervised by the Federal Reserve Board.

Irving Trust Company (New York)

Source: Irving Trust Company of New York, *Report to Stockholders of Irving Trust Company*, 1933.

The report gives the book value of the bank's loans to Germany as of 1931 (unspecified month) and December 31, 1933. It states that these credits are "due almost entirely from leading German banks based on their customers' obligations" but also include amounts due by the German Golddiscontbank and German government.

Manufacturers Trust Company (New York)

Source: Manufacturers Trust Company, *Statement of Condition*, 8 January 1936, pp. 12-13.

The Statement of Condition gives the total amount of Manufacturers Trust's German Standstill credits as of December 1935 and the amount by which German credits were reduced since July 1931. In addition, it gives the amount of the bank's participation in a short-term loan to the German government (ie. the Lee Higginson syndicate loan) and corresponding reduction since 1931. There is no information on the bank's Austrian and Hungarian credits.

National City Bank (New York)

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 22 April 1932.

The report gives the total amount of National City Bank's German, Austrian and Hungarian commitments on 22 April 1932. German loans include the bank's participation in the Lee Higginson syndicate loan to the German government as well as in the syndicate loan to the German Golddiscontbank. I estimated National City Bank's amount of frozen credits outstanding in July 1931 assuming a 10 per cent decline in German credits between July 1931 and April 1932.

National Shawmut Bank (Boston)

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 25 September 1931.

The report gives the list of National Shawmut Bank's acceptances, overdrafts and other loans to German, Austrian and Hungarian customers as of September 1931. The German loans include the bank's participation in the syndicate loan to the German Golddiscountbank. National Shawmut Bank did not participate in the Lee Higginson syndicate loan to the German government.

Philadelphia National Bank (Philadelphia)

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 24 September 1931.

The report gives the amounts of Philadelphia National Bank's credits to Germany, Austria and Hungary as of September 1931.

Public National Bank and Trust (New York)

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 12 November 1931.

The report gives details on Public National Bank and Trust's credits to Germany on 17 April 1931, 31 July 1931 and 12 November 1931. There is no information on the bank's Austrian and Hungarian credits.

J. Henry Schroder Banking Corporation (New York)

Source: Roberts (1992, p. 241).

Roberts (1992) gives the total amount of Schrobanco's frozen German acceptances and advances as of July 1931. There is no information on the bank's Austrian and Hungarian credits.

III. London and New York Banks' Foreign Correspondents

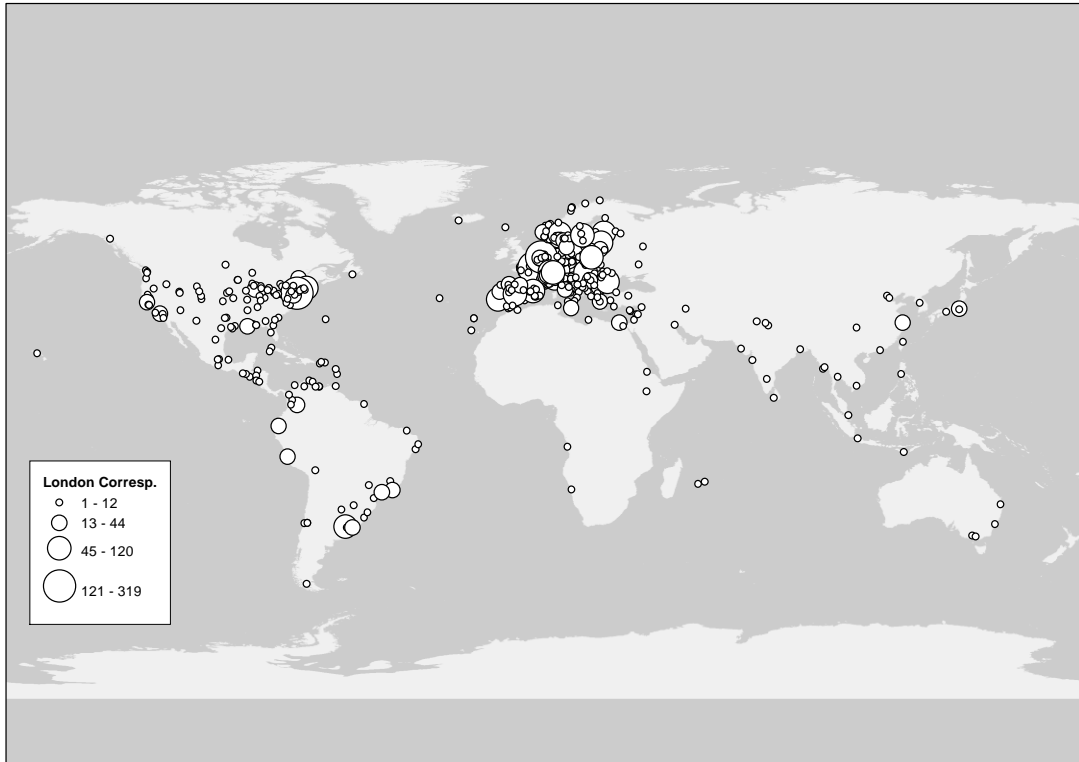
Data on London and New York City banks' foreign correspondents are from the *Bankers' Almanac and Year-Book*, 1930/31. The *Almanac* was a banking directory published annually by Thomas Skinner. The *Almanac* lists all important banks in the world and gives such information as their mailing and telegraphic addresses, names of partners, and (sometimes) balance sheet items. The *Almanac* also lists each foreign bank's correspondents in New York and London. *The Economist* referred to this publication as "a complete and world-wide banking directory" (9 December 1933) and noted that the *Almanac* gave "the name of nearly every city and town of any importance in the world, where there is a bank, and the name of the bank in that place" (16 December 1922). The *Almanac* was widely used in the London City as a source of information on international banks. For example, *The Economist* noted that "it would be difficult, we should imagine, to find a banker who was not armed with a copy of this volume" (16 December 1922).

The section of the *Almanac's* 1930/31 issue devoted to international banks lists 3,352 banks. I used an adapted version of the Correlates of War Project (2011) state classification in order to harmonize these banks' country names. According to this classification, London and New York banks had correspondents in (respectively) 85 and 86 different countries. Excluded from the analysis are London branches of foreign banks whose only correspondent abroad was their parent company.

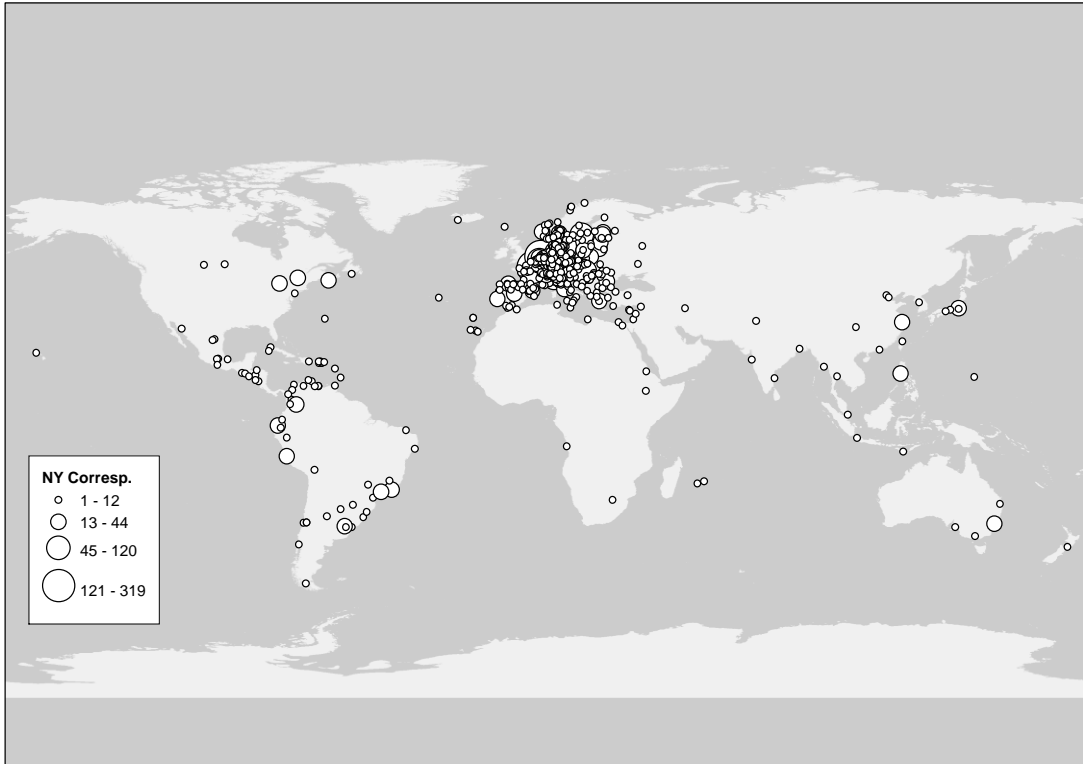
Figure S2-1 and Table S2-1 display the geographical distribution of all London and New York banks' foreign correspondents.

Figure S2-1. London and New York City Banks' Foreign Correspondents, 1930

A. London Banks



B. New York City Banks



Source: Author's computations based on the *Bankers' Almanac*, 1930/31

Table S2-1. New York City and London Banks' Foreign Correspondents, 1930

	NYC Banks		London Banks	
	Nb	Share	Nb	Share
Europe	3089	83.9%	4105	78.6%
- Austria/Hungary	193	5.2%	235	4.5%
- Belgium/Luxemburg	200	5.4%	261	5.0%
- Eastern Europe	244	6.6%	335	6.4%
- France	319	8.7%	380	7.3%
- Germany	744	20.2%	848	16.2%
- Italy	187	5.1%	240	4.6%
- Netherlands	264	7.2%	353	6.8%
- Nordic Countries	357	9.7%	507	9.7%
- Other Europe	19	0.5%	53	1.0%
- Southeastern Europe	155	4.2%	217	4.2%
- Spain/Portugal	167	4.5%	297	5.7%
- Switzerland	240	6.5%	379	7.3%
America	399	10.8%	933	17.9%
- Canada	54	1.5%	23	0.4%
- Latin America	345	9.4%	306	5.9%
- United States	--	--	604	11.6%
Asia	137	3.7%	130	2.5%
Oceania	33	0.9%	11	0.2%
Africa	22	0.6%	43	0.8%
Total	3680	100.0%	5222	100.0%

Note: The table shows the geographical repartition of London and New York City banks' foreign correspondents. It reports the number of existing correspondent relationships between each country/region's banks and London or New York banks (Nb) and each country/region's share in the total number of correspondents of London or New York banks (Share). Source: *Bankers' Almanac*, 1930/31.

Appendix S3

London and New York Banks' Geographical Specialization and Central European Correspondents

This appendix reports detailed results on a. the geographical concentration of London and New York City banks' portfolios of foreign correspondents and b. their total number of Central European correspondents.

Results on the banks' geographical specialization are based on two measures of concentration: the *Relative Concentration Index* and *Herfindahl-Hirschmann Index*. These two indices are defined as follows:

Let $i = 1, \dots, I$ be the London or New York creditor bank and let $c = 1, \dots, C$ be the correspondent's country. The share S of country c in bank i 's portfolio of correspondents is given by

$$S_{ic} = \frac{N_{ic}}{\sum_{c=1}^C N_{ic}} \quad)$$

Relative Concentration Index

Following Paravisini et al. (2014), I first measure geographical specialization/portfolio concentration through a *Relative Concentration Index* (RCI). This index was originally designed by Krugman (1991) to assess the degree of an industry's agglomeration. The index compares bank i 's portfolio of correspondents with the average portfolio (across all banks in the sample); it is defined formally as

$$RCI_i = \sum_{c=1}^C |S_{ic} - \bar{S}_{ic}| \quad)$$

Palan (2010) describes the RCI's general properties. The index takes the value 0 when the shares of the different countries in the bank's portfolio of correspondents exactly equal the shares in the average portfolio (across all banks). A bank is considered to be more specialized to the extent that its portfolio deviates from the average portfolio and, as a result, has a higher value of this index—up to its maximum value of $2(C - 1)/C$.

Herfindahl-Hirschman Index

The Herfindahl-Hirschman index (HHI) is defined here as the sum of the squares of all country shares in bank i 's portfolio of foreign correspondents; or formally as

$$HHI_i = \sum_{c=1}^C S_{ic}^2 \quad)$$

The HHI is a classic indicator of market and portfolio concentration. The index ranges from $1/C$ to 1.

I constructed these two indices for each London and New York City bank cited in the *Bankers' Almanac* as a correspondent of foreign banks. The advantage of using the RCI over the HHI is that it offers a *relative* measure of concentration (Paravisini et al., 2014), since this index measures the extent to which each bank's portfolio departs from the average portfolio (measured across the whole banking system). In

particular, index values are not affected by any selection biases in the *Bankers' Almanac* that result in some countries being under- or over-represented in the average portfolio.

Tables S3-1 and S3-2 report these statistics for (respectively) all London and New York banks that had at least 20 correspondents abroad. The last column also identifies the countries in which each bank specialized. A bank is considered “specialized” in a particular country if the share of its correspondents in that country is no less than 20 per cent. The shares of correspondents located in each bank’s “countries of specialization” are reported in parentheses.

Table S3-1 distinguishes between the London acceptance houses, including the merchant banks and Anglo-foreign banks (panel A); the London branches of foreign banks (panel B); the Big Five joint-stock clearing banks (panel C); and other British commercial banks (panel D).

Table S3-2 distinguishes between the US private banks and acceptance corporations (panel A); the New York branches of foreign banks (panel B); the five largest national banks and trusts (panel C); and other US commercial banks (panel D).

Figures S3-1 and S3-2 plot the total number of Central European correspondents (in Germany, Austria, Hungary) listed (respectively) for the different London and New York banks while distinguishing between commercial banks and other types of banks (acceptance houses, private banks and branches of foreign banks).

Table S3-1. London banks' foreign lending specialization

	Nb	RCI	HHI	Specialization
Panel A: Acceptance Houses				
London and Eastern Trade Bank	45	1.55	0.13	Italy (0.24)
Brown Shipley & Co.	39	1.44	0.53	USA (0.72)
Anglo International Bank Ltd.	39	1.32	0.13	Germany (0.23)
A. Ruffer & Sons Ltd.	34	1.28	0.20	Switzerland (0.29); France (0.26)
N. M. Rothschild & Sons	44	1.26	0.17	Germany (0.32); Netherlands (0.20)
J. Henry Schröder & Co.	154	1.23	0.38	Germany (0.60)
Hambros Bank Ltd.	245	1.21	0.12	Norway (0.24); Denmark (0.20)
Anglo South American Bank Ltd.	26	1.20	0.08	
S. Japhet & Co. Ltd.	158	1.20	0.35	Germany (0.58)
British Overseas Bank Ltd.	69	1.19	0.11	Belgium (0.29)
London Merchant Bank Ltd.	32	1.17	0.19	Germany (0.41)
Guinness Mahon & Co.	58	1.10	0.21	Germany (0.41)
Baring Bros. & Co. Ltd.	53	1.09	0.18	Switzerland (0.38)
Higginson & Co.	23	1.05	0.18	Germany (0.35)
Anglo French Banking Corporation	64	1.02	0.11	
Kleinworts, Sons & Co.	160	0.98	0.14	Germany (0.34)
Frederick Huth & Co.	57	0.97	0.09	
Seligman Brothers Ltd.	50	0.89	0.11	Germany (0.20); Netherlands (0.20)
Lazard Brothers & Co. Ltd.	88	0.81	0.08	
M. Samuel & Co. Ltd.	125	0.81	0.08	
Samuel Montagu & Co.	45	0.72	0.09	
Average	77	1.12	0.17	
Panel B: Foreign Banks				
Credito Italiano (Italy)	39	1.48	0.29	Italy (0.51)
Societe Generale (France)	22	1.42	0.29	France (0.50)
Credit Lyonnais (France)	66	1.31	0.10	
Banque Belge Pour L'Etranger (Belgium)	102	1.16	0.17	Belgium (0.38)
Comptoir National d'Escompte (France)	76	1.03	0.06	
Bankers Trust (USA)	32	0.98	0.14	USA (0.22)
Banca Commerciale Italiana (Italy)	94	0.98	0.12	Italy (0.31)
Guaranty Trust (USA)	90	0.96	0.18	USA (0.33); Germany (0.23)
National City Bank (USA)	59	0.93	0.17	USA (0.37)
Swiss Bank Corporation (Switzerland)	379	0.88	0.16	Switzerland (0.29); Germany (0.24)
Chase National Bank (USA)	94	0.86	0.12	Germany (0.27)
Average	96	1.09	0.16	
Panel C: Big Five Clearing Banks				
Barclays Bank Ltd.	376	0.66	0.11	USA (0.27)
National Provincial Bank Ltd.	214	0.66	0.08	
Lloyds Bank Ltd.	227	0.57	0.09	USA (0.23)
Midland Bank Ltd.	714	0.52	0.05	
Westminster Bank Ltd.	349	0.47	0.07	
Average	376	0.57	0.08	
Panel D: Other Commercial Banks				
Glyn Mills and Co.	25	1.09	0.18	USA (0.36)
Royal Bank of Scotland	48	0.88	0.08	France (0.21)
Bank of Scotland	56	0.80	0.08	
Martins Bank Ltd.	57	0.72	0.12	
Average	47	0.88	0.11	

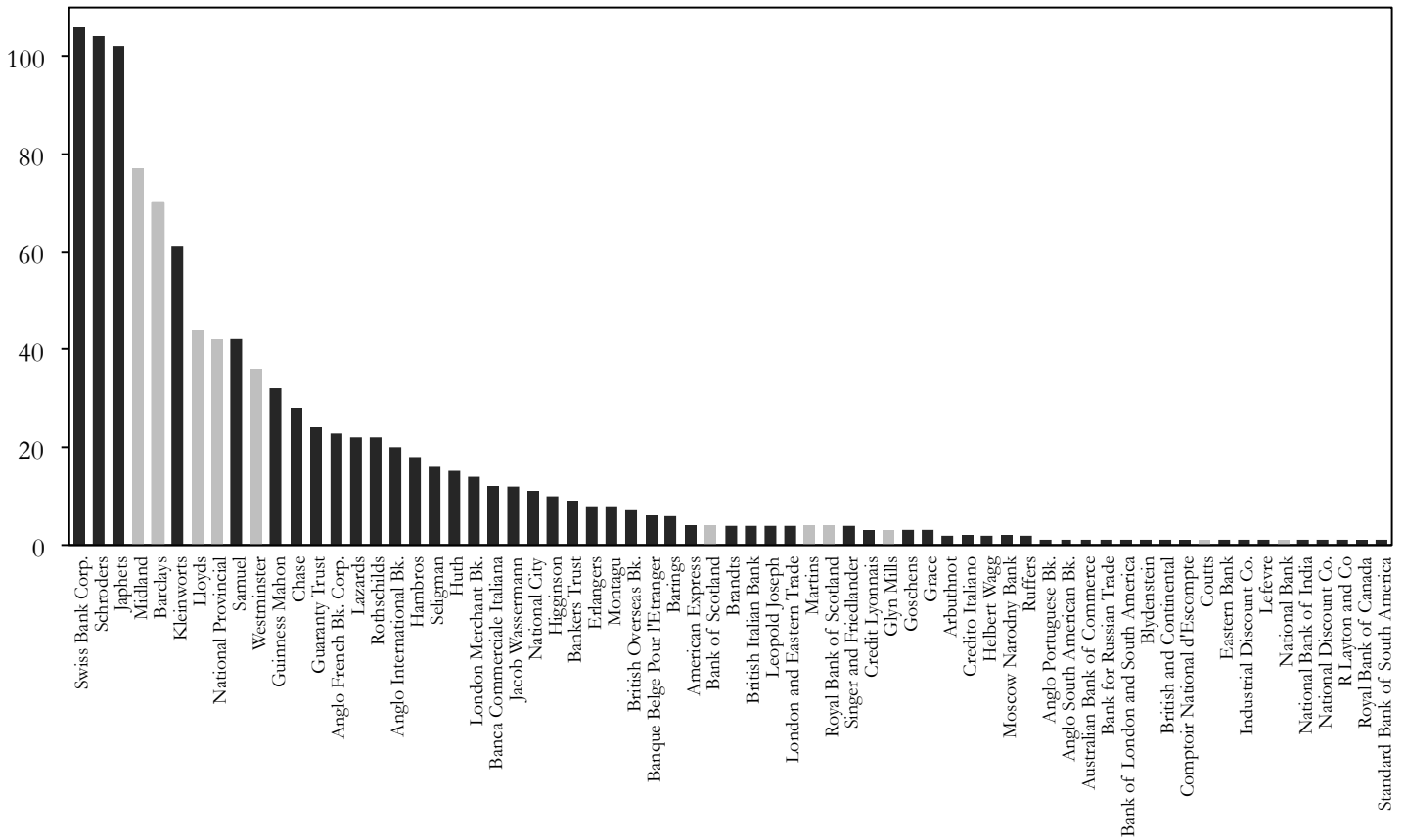
Source: Author's computations from *Bankers' Almanac*, 1930/31. For each bank, the table reports the total number of foreign correspondents (Nb), the Relative Concentration Index (RCI), the Herfindahl-Hirschman index (HHI) and the countries of specialization (Specialization). A bank is considered "specialized" in a particular country if the share of its correspondents in that country is no less than 20 per cent. The share of the banks' foreign correspondents located in each of their "countries of specialization" are reported in parentheses. Banks are ranked by their RCI index value.

Table S3-2. New York City banks' foreign lending specialization

	Nb	RCI	HHI	Specialization
Panel A: Private Banks and Acceptance Corporations				
Iselin & Co.	85	1.53	0.53	Switzerland (0.69); France (0.21)
Lazard Frères & Co.	23	1.26	0.29	France (0.48); Germany (0.22)
Lee Higginson & Co.	27	1.26	0.21	Germany (0.33); Netherlands (0.22)
French American Banking Corporation	60	1.23	0.30	France (0.53)
Hallgarten & Co.	58	1.09	0.20	Germany (0.36); Netherlands (0.21)
J. Henry Schroder Banking Corporation	100	1.09	0.35	Germany (0.57)
Harriman Brothers & Co.	21	1.07	0.17	Germany (0.29); France (0.24)
Huth & Co.	25	1.07	0.09	
J. P. Morgan & Co.	21	1.03	0.11	France (0.24)
Ladenburg Thalmann & Co.	66	1.00	0.34	Germany (0.56)
Brown Brothers & Co.	94	0.99	0.09	Belgium (0.20)
International Acceptance Bank	144	0.92	0.20	Germany (0.43)
Average	60	1.13	0.24	
Panel B: Foreign Banks				
Banque Belge Pour l'Etranger (Belgium)	75	1.52	0.23	Belgium (0.44)
Banca Commerciale Italiana (Italy)	69	1.34	0.26	Italy (0.49)
Royal Bank of Canada (Canada)	21	1.20	0.12	Spain (0.24)
Average	55	1.35	0.21	
Panel C: Five Largest National Banks and Trusts				
Chase National Bank	532	0.75	0.15	Germany (0.37)
National City Bank	494	0.72	0.06	
Irving Trust	353	0.64	0.05	
Bankers Trust	95	0.63	0.06	
Guaranty Trust	399	0.58	0.06	
Average	375	0.66	0.08	
Panel D: Other National Banks and Trusts				
New York Trust	89	1.11	0.12	Norway (0.25)
Commercial National Bank and Trust	25	1.05	0.15	France (0.28); Germany (0.20)
Chatham Phenix National Bank and Trust	21	1.03	0.07	
American Express	61	1.02	0.06	
Manufacturers Trust	39	1.00	0.08	
Chemical Bank and Trust	43	0.94	0.05	
Bank of America	98	0.90	0.11	Germany (0.23)
Central Hanover Bank and Trust	105	0.77	0.09	Germany (0.21)
Average	60	0.98	0.09	

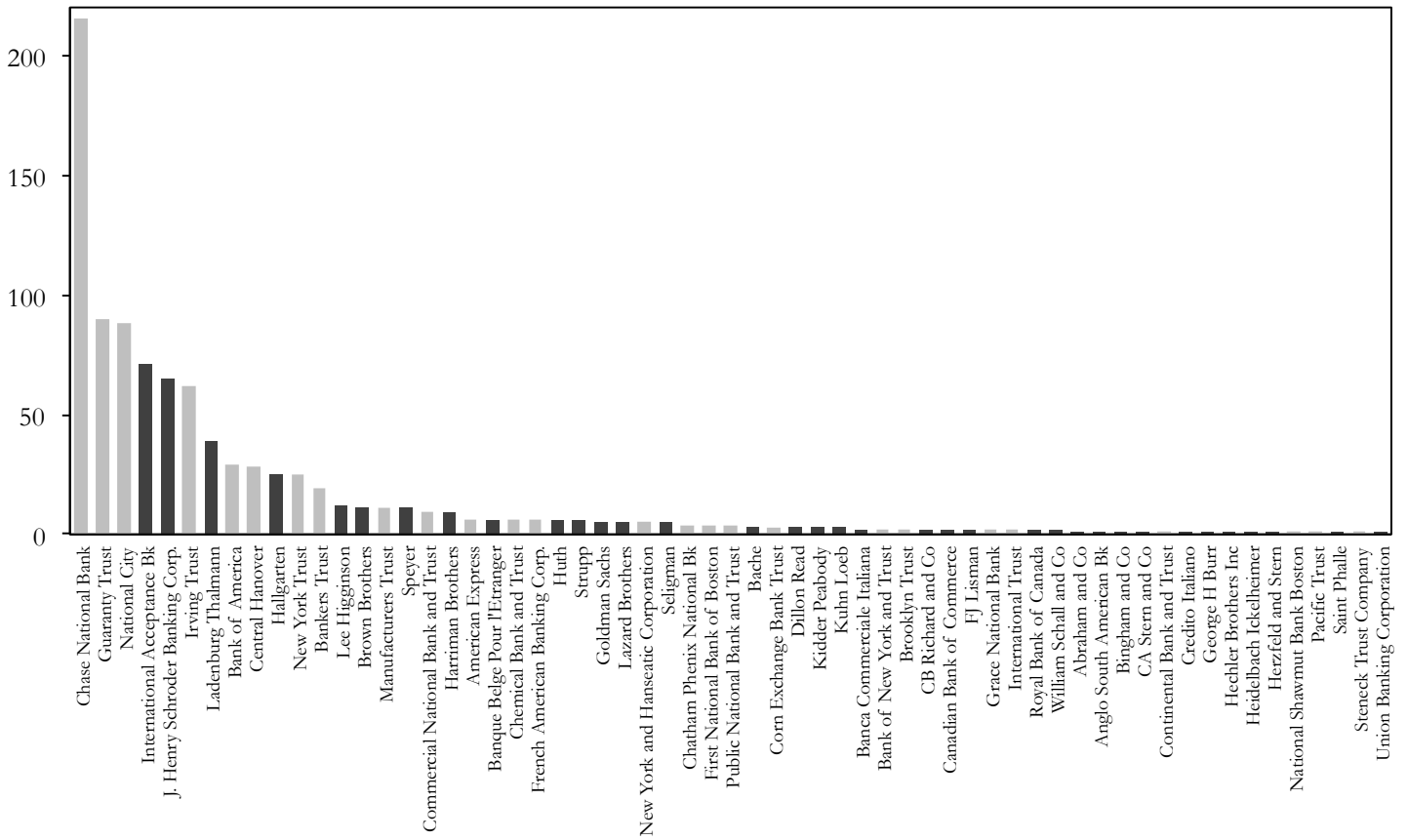
Source: Author's computations based on the *Bankers' Almanac*, 1930/1931. Note: see table S3-1.

Figure S3-1. London banks' central European correspondents
(Austria, Germany and Hungary)



Source: Author's computations based on the *Bankers' Almanac*. The figure displays the total number of correspondents that each London bank had in Austria, Germany and Hungary in 1930/1931. Light-grey bars correspond to commercial banks (joint-stock clearing banks). Dark-grey bars correspond to acceptance houses (merchant banks and Anglo-foreign banks) and foreign banks.

**Figure S3-2. New York City banks' central European correspondents
(Austria, Germany and Hungary)**



Source: Author's computations based on the *Bankers' Almanac*. The figure displays the total number of correspondents that each New York City bank had in Austria, Germany and Hungary in 1930/1931. Light-grey bars correspond to commercial banks (national banks and trust companies). Dark-grey bars correspond to private banks, acceptance corporations, and foreign banks.

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